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MATHEMATICS · EAPCET (EAMCET)

Trigonometry

Previous Year Questions with answers

996 questions · **149** papers · **2010–2026** · newest paper first

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What is in this PDF: every Trigonometry question we hold from past AP and TS EAPCET (called EAMCET until 2020 in Andhra Pradesh and 2023 in Telangana) papers, with its options and answer. Where an answer comes from a source other than the official final key, it says so next to the answer.

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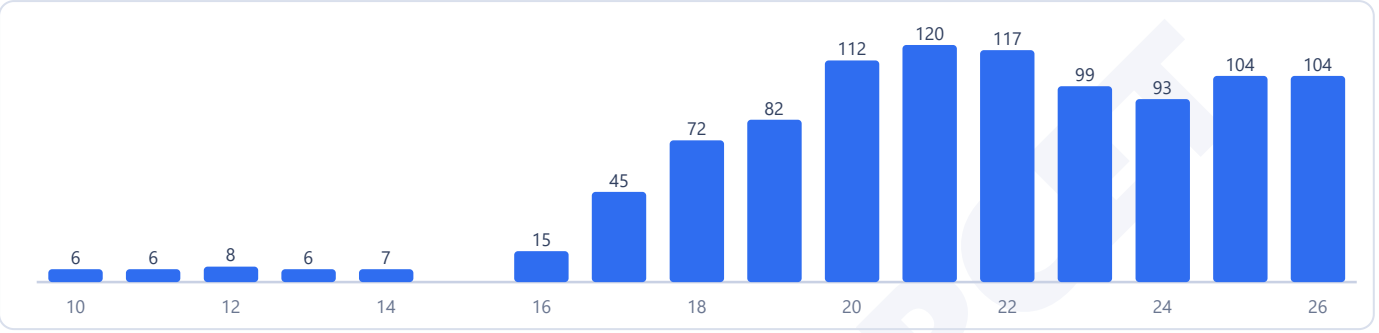
Chapter at a glance

8.4%	996	77 of 77	996 / 0
of Mathematics questions, 2022–2026	questions, 2010–2026	papers asked it, 2022–2026	MCQ / numerical, 2010–2026

Trend. Steady: 6.5 questions per paper in 2024–2026 against 7 in 2022–2023.

Questions per year



Counts are the questions we hold: 996 in 149 papers. 15 questions in this chapter came back in more than one paper.

Most-asked topics in this chapter (2010–2026)

Ratios & Identities	451
Properties of Triangles	405
Trigonometric Equations	130
Heights & Distances	10

How often it comes up

Trigonometry stands at rank 1 of 29 mathematics chapters, constituting the single largest subject area in the entire EAPCET examination. Across the full historical record from 2010 through 2026, Trigonometry produced 996 questions across 149 evaluated exam papers, appearing in all 149 papers to average 6.7 questions per paper and an 8.4 percent subject share. In modern examination cycles from 2022 to 2026, the chapter maintained this dominant presence across all 77 sittings, yielding 517 questions (averaging 6.7 questions per paper and an 8.4 percent subject share).

Because it appears in every paper in recent history, every student sitting for an EAPCET shift faces six to eight trigonometry questions. In the recent three-year interval spanning 2024 to 2026, Trigonometry generated 301 questions across 46 sittings (all 46 papers, averaging 6.5 questions per test and an 8.2 percent share). During the older testing era from 2010 to 2021, question setters produced 479 questions across 72 sittings (all 72 papers, 6.7 per test, 8.3 percent share). When examining long-range trends, comparing early testing with the last three years shows the share is about the same, and comparing recent testing with the last three years shows the share is about the same. Across state boards between 2022 and 2026, Andhra Pradesh papers contributed 358 questions across 48 papers (all 48 papers, 7.5 per test, 9.3 percent share), while Telangana examinations set 159 questions across 29 papers (all 29 papers, 5.5 per test, 6.9 percent share).

Most-asked topics

Questions in Trigonometry organize into four key areas:

- **Ratios & Identities**: Providing 451 total questions, including 242 in modern examinations (tested through 2026). Coverage emphasizes fundamental identities, compound angles (addition and subtraction formulas), multiple and submultiple angles, transformation of sums into products, conditional trigonometric identities for angles summing to pi, and maximum or minimum values of expressions like a cos x plus b sin x.

- **Properties of Triangles**: Generating 405 total questions, with 210 in modern cycles (tested through 2026). Key themes include the sine rule, cosine rule, projection rule, half-angle formulas (tangent, sine, cosine), ex-radii and in-radius relations, circumradius formulas, and pedal triangle properties.
- **Trigonometric Equations**: Contributing 130 total questions, with 61 in modern testing (tested through 2026). Core concepts encompass principal and general solutions for sine, cosine, and tangent equations, solving quadratic trigonometric polynomials, and finding the number of distinct roots within specified intervals.
- **Heights & Distances**: Accounting for 10 historical questions, with 4 appearing in recent testing (last tested in 2025). Problems involve angles of elevation and depression, observing structures from two collinear points, and bearing navigation triangles.

What the questions look like

Examiners test complex algebraic manipulations of identities, half-angle relations in triangles, and general solution roots.

A typical problem requires students to simplify compound-angle expressions or cyclic systems where trigonometric functions of multiple variables are coupled together. Another widespread format presents half-angle tangent or sine ratios for a triangle, asking candidates to deduce the ratio of its sides, the greatest interior angle, or the value of ex-radii. Students also regularly encounter multi-term trigonometric equations where sum-to-product formulas must be applied to factor out common terms and isolate valid roots in given intervals.

How to practise it

Prioritize mastering the transformation formulas that convert sums to products and products to sums. For example, sin C plus sin D equals two sin ((C plus D) over two) cos ((C minus D) over two), and cos C plus cos D equals two cos ((C plus D) over two) cos ((C minus D) over two). These formulas are vital for factoring trigonometric equations. When solving equations, remember the general solution formats: sin theta equals sin alpha implies theta equals n pi plus (negative one) to the power n times alpha; cos theta equals cos alpha implies theta equals two n pi plus or minus alpha; and tan theta equals tan alpha implies theta equals n pi plus alpha.

In Properties of Triangles, memorize the sine rule (a over sin A equals b over sin B equals c over sin C equals two R) and the cosine rule (cos A equals (b squared plus c squared minus a squared) over two b c). Learn the half-angle identities thoroughly: tan (A over two) equals square root of ((s minus b)(s minus c) over s(s minus a)), where s is the semi-perimeter. Be comfortable connecting in-radius r equals Delta over s, and ex-radii r one equals Delta over (s minus a), r two equals Delta over (s minus b), and r three equals Delta over (s minus c).

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Q1 AP EAPCET 2026 · 18 May · Shift 1 MCQ

If $\tan\alpha = \frac{-7}{24}$, $\sec\beta = \frac{61}{60}$ and both α, β lie in the same quadrant, then $\cos(\alpha+\beta) =$

(A) $\frac{1363}{1525}$
(B) $\frac{1236}{1525}$
(C) $\frac{23}{24}$
(D) $\frac{55}{61}$

Answer: (A) $\frac{1363}{1525}$ · The council's preliminary key

Q2 AP EAPCET 2026 · 18 May · Shift 1 MCQ

If A and B are the minimum and maximum values of $\mathrm{Sin}^6 x + \mathrm{Cos}^6 x$, then $A + B =$

(A) 1
(B) -1
(C) $\frac{5}{4}$
(D) $\frac{7}{4}$

Answer: (C) $\frac{5}{4}$ · The council's preliminary key

Q3 AP EAPCET 2026 · 18 May · Shift 1 MCQ

The sum of all the values of $\theta \in (0, 2\pi)$ satisfying the equation $\mathrm{Sin}\,\theta + 3\,\mathrm{Cos}2\,\theta + \mathrm{Sin}\,3\theta = \mathrm{Cos}\theta + 3\mathrm{Sin}\,2\theta + \mathrm{Cos}\,3\theta$ is

(A) $\frac{5\pi}{8}$
(B) $\frac{13\pi}{8}$
(C) $\frac{32\pi}{8}$
(D) $\frac{28\pi}{8}$

Answer: (D) $\frac{28\pi}{8}$ · The council's preliminary key

Q4 AP EAPCET 2026 · 18 May · Shift 1 MCQ

In a ΔABC, if $\cot\frac{A}{2} : \cot\frac{B}{2} : \cot\frac{C}{2} = 3 : 5 : 7$, then $\cos A : \cos B : \cos C =$

(A) $2 : 9 : 12$
(B) $6 : 5 : 4$
(C) $1 : 2 : 5$
(D) $3 : 4 : 5$

Answer: (A) $2 : 9 : 12$ · The council's preliminary key

Q5 AP EAPCET 2026 · 18 May · Shift 1 MCQ

If the sides of a triangle ABC are in arithmetic progression, then $b\cos\left(\frac{A-C}{2}\right) =$

(A) $(a+b)\sin\frac{C}{2}$
(B) $(a+c)\sin\frac{B}{2}$
(C) $(b+c)\sin\frac{A}{2}$
(D) $(a+c)\cos\frac{B}{2}$

Answer: (B) $(a+c)\sin\frac{B}{2}$ · The council's preliminary key

Q6 AP EAPCET 2026 · 18 May · Shift 1 MCQ

In ΔABC, If $r_1=\frac{21}{2}$, $r_2=12$, $r_3=14$, then $\Delta=$

(A) 84
(B) 72
(C) 64
(D) 96

Answer: (A) 84 · The council's preliminary key

Q7 AP EAPCET 2026 · 18 May · Shift 1 MCQ

If $u=\sqrt{a^2\cos^2\theta+b^2\sin^2\theta}+\sqrt{a^2\sin^2\theta+b^2\cos^2\theta}$, then the difference between the maximum and minimum values of u^2 is

(A) $(a+b)^2$
(B) $(a-b)^2$
(C) $2\sqrt{a^2+b^2}$
(D) $2\sqrt{a^2-b^2}$

Answer: (B) $(a-b)^2$ · The council's preliminary key

Q8 AP EAPCET 2026 · 18 May · Shift 2 MCQ

If $\cos x+\cos^2 x=1$, then $\sin^6 x+3\sin^8 x+3\sin^{10} x+\sin^{12} x=$

(A) 0
(B) 1
(C) 2
(D) 3

Answer: (B) 1 · The council's preliminary key

Q9 AP EAPCET 2026 · 18 May · Shift 2 MCQ

Assertion (A): $\cos^2 5^\circ+\cos^2 10^\circ+\cos^2 15^\circ+\ldots+\cos^2 85^\circ=\frac{17}{2}$

Reason (R) : If $A+B=90^\circ$, then $\cos^2 A+\cos^2 B=1$

Then, which one of the following is True?

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(A) A is true, R is true and R is the correct explanation of A
(B) A is true, R is true and R is not correct explanation of A
(C) A is true, R is false
(D) A is false, R is true

Answer: (A) A is true, R is true and R is the correct explanation of A · The council's preliminary key

Q10 AP EAPCET 2026 · 18 May · Shift 2 MCQ

If $\sin A = \frac{3}{5}$ and A lies in the second quadrant, then $\frac{\tan A - \sec A}{\cot A + \operatorname{cosec} A} =$

(A) $\frac{2}{5}$
(B) $\frac{11}{15}$
(C) $\frac{4}{3}$
(D) $\frac{3}{2}$

Answer: (D) $\frac{3}{2}$ · The council's preliminary key

Q11 AP EAPCET 2026 · 18 May · Shift 2 MCQ

Statement - I: If $x \in \left(0, \frac{\pi}{2}\right)$ and $\cos 3x + \cos x = \cos 2x$, then

$$x = \frac{\pi}{4} \text{ or } \frac{\pi}{3}$$

Statement - II: If $\sin x \sin 2x = \cos x \cos 2x - 1$, then

$$x = \frac{n\pi}{3}, n \in Z$$

(A) I is true and II is true
(B) I is false and II is true
(C) I is true and II is false
(D) I is false and II is false

Answer: (C) I is true and II is false · The council's preliminary key

Q12 AP EAPCET 2026 · 18 May · Shift 2 MCQ

In Δ ABC, if $\mathrm{A} + \mathrm{B} = 120^\circ$, $\mathrm{a} = \sqrt{3} + 1$ and $b = \sqrt{3} - 1$, then $\mathrm{A} : \mathrm{B} =$

(A) $9 : 7$
(B) $7 : 1$
(C) $5 : 3$
(D) $3 : 1$

Answer: (B) $7 : 1$ · The council's preliminary key

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Q13 AP EAPCET 2026 · 18 May · Shift 2 MCQ

If the angles of a triangle are in the ratio $4 : 1 : 1$, then the ratio between its largest side and its perimeter is

(A) $1 : (1 + \sqrt{3})$
(B) $2 : 3$
(C) $\sqrt{3} : (2 + \sqrt{3})$
(D) $1 : (2 + \sqrt{3})$

Answer: (C) $\sqrt{3} : (2 + \sqrt{3})$ · The council's preliminary key

Q14 AP EAPCET 2026 · 18 May · Shift 2 MCQ

If the lengths of the sides of a triangle a, b, c $(a > b > c)$ are in arithmetic progression and the greatest angle is twice the smallest, then $a : b : c =$

(A) $6 : 5 : 4$
(B) $5 : 6 : 7$
(C) $5 : 4 : 3$
(D) $13 : 9 : 5$

Answer: (A) $6 : 5 : 4$ · The council's preliminary key

Q15 AP EAPCET 2026 · 15 May · Shift 1 MCQ

$\sin\frac{8\pi}{9}\ \sin\frac{7\pi}{9}\ \sin\frac{2\pi}{3}\ \sin\frac{5\pi}{9} =$

(A) $\frac{3}{4}$
(B) $\frac{3}{8}$
(C) $\frac{3}{16}$
(D) $\frac{3}{32}$

Answer: (C) $\frac{3}{16}$ · The council's preliminary key

Q16 AP EAPCET 2026 · 15 May · Shift 1 MCQ

If $A + B + C = \pi$ and $\cos A = \cos B \cos C$, then $\tan A - \tan B - \tan C =$

(A) -1
(B) 0
(C) 1
(D) 2

Answer: (B) 0 · The council's preliminary key

Q17 AP EAPCET 2026 · 15 May · Shift 1 MCQ

If $7\sin x + 15\sin y = 17$, then the maximum value of $7\cos x + 15\cos y$ is

(A) $\sqrt{190}$
(B) $\sqrt{195}$
(C) $\sqrt{200}$
(D) $\sqrt{205}$

Answer: (B) $\sqrt{195}$ · The council's preliminary key

Q18 AP EAPCET 2026 · 15 May · Shift 1 MCQ

All the values of α satisfying the equations $2\cos^2\alpha - 3\cos\alpha = 32\tan^8\theta$ and $3\cos 2\theta = 1$ are

(A) $n\pi \pm \frac{\pi}{3}, n \in \mathbb{Z}$
(B) $n\pi \pm \frac{2\pi}{3}, n \in \mathbb{Z}$
(C) $2n\pi \pm \frac{\pi}{3}, n \in \mathbb{Z}$
(D) $2n\pi \pm \frac{2\pi}{3}, n \in \mathbb{Z}$

Answer: (D) $2n\pi \pm \frac{2\pi}{3}, n \in \mathbb{Z}$ · The council's preliminary key

Q19 AP EAPCET 2026 · 15 May · Shift 1 MCQ

If the angles of triangle ABC are in arithmetic progression and the sides a, b and c satisfy $\frac{\sqrt{3}}{2} < \frac{b}{a} < 1$, $c < b$, then the possible values of the side c are

(A) $\frac{a \pm \sqrt{4b^2 - 3a^2}}{2a}$
(B) $\frac{a \pm \sqrt{4b^2 - 3a^2}}{4}$
(C) $\frac{a \pm \sqrt{4b^2 - 3a^2}}{2b}$
(D) $\frac{a \pm \sqrt{4b^2 - 3a^2}}{2}$

Answer: (D) $\frac{a \pm \sqrt{4b^2 - 3a^2}}{2}$ · The council's preliminary key

Q20 AP EAPCET 2026 · 15 May · Shift 1 MCQ

In a ΔABC, if $a : b : c = 5 : 6 : 7$, then the ratio of the radius of the circumcircle to that of the incircle is

(A) $35 : 16$
(B) $7 : 5$
(C) $9 : 7$
(D) $16 : 9$

Answer: (A) $35 : 16$ · The council's preliminary key

Q21 AP EAPCET 2026 · 15 May · Shift 1 MCQ

In a ΔABC, Match the items of List – I with those of List – II

List – I	List – II

A. If $rr_1 = r_2r_3$, then	I. Δ^2
B. If $r_1 + r_2 = r_3 - r$, then	II. $\angle A = 90^\circ$
C. $\frac{1}{r_1} + \frac{1}{r_2} + \frac{1}{r_3} =$	III. $\angle C = 90^\circ$
D. $rr_1r_2r_3 =$	IV. $\frac{1}{R}$
	V. $\frac{1}{r}$

The correct match is

(A) A-II, B-III, C-V, D-IV

(B) A-II, B-III, C-V, D-I

(C) A-II, B-III, C-I, D-V

(D) A-III, B-II, C-V, D-I

Answer: (B) A-II, B-III, C-V, D-I · The council's preliminary key

Q22 AP EAPCET 2026 · 15 May · Shift 2 MCQ

If $\cos\alpha + \cos\beta + \cos\gamma = \sin\alpha + \sin\beta + \sin\gamma = 0$, then $2(\cos^2\alpha + \cos^2\beta - \cos^2\gamma) =$

(A) $1 + \cos\alpha\cos\beta\sin\gamma$

(B) $1 - 2\cos(\alpha + \beta)$

(C) $1 + \cos\alpha\cos\beta\cos\gamma$

(D) $1 + 2\cos(\alpha + \beta)$

Answer: (B) $1 - 2\cos(\alpha + \beta)$ · The council's preliminary key

Q23 AP EAPCET 2026 · 15 May · Shift 2 MCQ

If $\sin x > 0$ and $\sin^2 x + \sin^4 x + 2\sin^3 x = 1$, then $\cos^{16} x + \cos^8 x + 4(\cos^{14} x + \cos^{10} x) + 6\cos^{12} x + 1 =$

(A) 1

(B) 2

(C) 3

(D) 4

Answer: (B) 2 · The council's preliminary key

Q24 AP EAPCET 2026 · 15 May · Shift 2 MCQ

For $x \in R$, all the values of the expression $4(\sin^6 x + \cos^6 x) - 3(\sin^4 x + \cos^4 x) + 2(\sin^2 x + \cos^4 x)$ lie in the interval

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(A) $[3,5]$
(B) $[2,4]$
(C) $[1,3]$
(D) $[1,4]$

Answer: (C) $[1,3]$ · The council's preliminary key

Q25 AP EAPCET 2026 · 15 May · Shift 2 MCQ

$\cos^4\frac{\pi}{12}+\cos^4\frac{5\pi}{12}+\cos^4\frac{7\pi}{12}+\cos^4\frac{11\pi}{12}=$

(A) $\frac{3}{2}$
(B) $\frac{4}{3}$
(C) $\frac{5}{3}$
(D) $\frac{7}{4}$

Answer: (D) $\frac{7}{4}$ · The council's preliminary key

Q26 AP EAPCET 2026 · 15 May · Shift 2 MCQ

If α is a solution of the equation $\cos\theta+\sqrt{3}\sin\theta=2$, then $\tan\alpha=$

(A) $\frac{1}{\sqrt{3}}$
(B) 1
(C) $\sqrt{3}$
(D) -1

Answer: (C) $\sqrt{3}$ · The council's preliminary key

Q27 AP EAPCET 2026 · 15 May · Shift 2 MCQ

In ΔABC, if $a=5, s=8$ and $\tan\frac{A}{2}=\frac{1}{\sqrt{6}}$, then the circumradius of the triangle is

(A) $32\sqrt{6}$
(B) $23\sqrt{6}$
(C) $\frac{21}{4\sqrt{6}}$
(D) $\frac{35}{4\sqrt{6}}$

Answer: (D) $\frac{35}{4\sqrt{6}}$ · The council's preliminary key

Q28 AP EAPCET 2026 · 15 May · Shift 2 MCQ

In ΔABC, if $b=7, c=9, \cos B=\frac{17}{27}$ and a is an integer, then $r=$

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(A) $\frac{9}{2}$
(B) $2\sqrt{\frac{10}{11}}$
(C) 36
(D) $2\sqrt{3}$

Answer: (B) $2\sqrt{\frac{10}{11}}$ · The council's preliminary key

Q29 AP EAPCET 2026 · 15 May · Shift 2 MCQ

In ΔABC, if $7r_1 = 15r$ and $5r_2 = 3r_3$, then $a : b : c =$

(A) $7 : 9 : 11$
(B) $3 : 4 : 5$
(C) $5 : 7 : 9$
(D) $4 : 5 : 6$

Answer: (D) $4 : 5 : 6$ · The council's preliminary key

Q30 AP EAPCET 2026 · 14 May · Shift 1 MCQ

If $f(x) = \frac{x}{1-3x^2} + \frac{x}{8}$, then $f(\tan 15^\circ) + f(\tan 20^\circ) =$

(A) $\frac{1+\sqrt{3}}{8}$
(B) $\frac{3}{8}(3+\sqrt{3})$
(C) $\frac{2+\sqrt{3}}{8}$
(D) $\frac{3}{8}(1+\sqrt{3})$

Answer: (D) $\frac{3}{8}(1+\sqrt{3})$ · The council's preliminary key

Q31 AP EAPCET 2026 · 14 May · Shift 1 MCQ

If $A + B + C = \pi$, then

$$3 - 2\left(\cos\frac{A}{2}\cos\frac{B}{2}\sin\frac{C}{2} + \cos\frac{A}{2}\sin\frac{B}{2}\cos\frac{C}{2} + \sin\frac{A}{2}\cos\frac{B}{2}\cos\frac{C}{2}\right) =$$

(A) $\sin^2 A + \sin^2 B + \sin^2 C$
(B) $\cos^2 A + \cos^2 B + \cos^2 C$
(C) $\sin^2\frac{A}{2} + \sin^2\frac{B}{2} + \sin^2\frac{C}{2}$
(D) $\cos^2\frac{A}{2} + \cos^2\frac{B}{2} + \cos^2\frac{C}{2}$

Answer: (C) $\sin^2\frac{A}{2} + \sin^2\frac{B}{2} + \sin^2\frac{C}{2}$ · The council's preliminary key

Q32 AP EAPCET 2026 · 14 May · Shift 1 MCQ

If $6\sin^2 x = 3\cos^4 x - \sin^2 x \cos^2 x$, then $x =$

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(A) $2n\pi \pm \frac{\pi}{3}\ \forall n \in \mathbb{Z}$
(B) $n\pi \pm \frac{\pi}{3}\ \forall n \in \mathbb{Z}$
(C) $n\pi \pm \frac{\pi}{6}\ \forall n \in \mathbb{Z}$
(D) $2n\pi \pm \frac{\pi}{4}\ \forall n \in \mathbb{Z}$

Answer: (C) $n\pi \pm \frac{\pi}{6}\ \forall n \in \mathbb{Z}$ · The council's preliminary key

Q33 AP EAPCET 2026 · 14 May · Shift 1 MCQ

In a triangle ABC, if $a = 6, b = 5, c = 9$, then the sum of the squares of the reciprocals of the altitudes of the triangle is

(A) $\frac{71}{400}$
(B) $\frac{142}{300}$
(C) $\frac{80}{421}$
(D) $\frac{15}{157}$

Answer: (A) $\frac{71}{400}$ · The council's preliminary key

Q34 AP EAPCET 2026 · 14 May · Shift 1 MCQ

In a triangle ABC, $\frac{r_3+r_2}{r_2+r_1} =$

(A) $\frac{1+\cos A}{1+\cos C}$
(B) $\frac{1-\cos B}{1-\cos C}$
(C) $\frac{1+\cos A}{1+\cos B}$
(D) $\frac{1-\cos A}{1-\cos C}$

Answer: (A) $\frac{1+\cos A}{1+\cos C}$ · The council's preliminary key

Q35 AP EAPCET 2026 · 14 May · Shift 1 MCQ

In a triangle ABC, If $r_1 = \frac{5}{\sqrt{2}}$; $r_2 = 2\sqrt{2}$; $r = \sqrt{2}$, then $\frac{a+c}{b} =$

(A) 15
(B) 12
(C) 3
(D) 5

Answer: (C) 3 · The council's preliminary key

Q36 AP EAPCET 2026 · 14 May · Shift 2 MCQ

$$\frac{\cos\theta}{1-\cos\theta} + \frac{\sec\theta}{1+\sec\theta} =$$

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(A) $1+2\tan^2\theta$

(B) $\sec^2\theta+\operatorname{cosec}^2\theta$

(C) $\tan^2\theta+\cot^2\theta$

(D) $1+2\cot^2\theta$

Answer: (D) $1+2\cot^2\theta$ · The council's preliminary key

Q37 AP EAPCET 2026 · 14 May · Shift 2 MCQ

For $\theta\in\left(0,\frac{\pi}{2}\right)$, if the complete range of $(\cot^2\theta-\cos^2\theta)(\tan^2\theta-\sin^2\theta)$ is $(\alpha,\beta]$ then $\beta-\alpha=$

(A) 1

(B) $\frac{1}{2}$

(C) $\frac{1}{4}$

(D) 2

Answer: (C) $\frac{1}{4}$ · The council's preliminary key

Q38 AP EAPCET 2026 · 14 May · Shift 2 MCQ

$\cos\frac{\pi}{7}\ \cos\frac{2\pi}{7}\ \cos\frac{3\pi}{7}\ \cos\frac{4\pi}{7}\ \cos\frac{5\pi}{7}\ \cos\frac{6\pi}{7}=$

(A) $\frac{1}{8}$

(B) $-\frac{1}{16}$

(C) $\frac{1}{32}$

(D) $-\frac{1}{64}$

Answer: (D) $-\frac{1}{64}$ · The council's preliminary key

Q39 AP EAPCET 2026 · 14 May · Shift 2 MCQ

If $\sin\theta\neq0$ and $\frac{1}{2}\sin\theta$, $\cos\theta$, $\cot\theta$ are in geometric progression, then the number of values of θ lying in the interval $(-2\pi,2\pi)$ is

(A) 5

(B) 7

(C) 10

(D) 8

Answer: (D) 8 · The council's preliminary key

Q40 AP EAPCET 2026 · 14 May · Shift 2 MCQ

In a triangle ABC, if $a=2,\ b=4,\ \cos C=-\frac{5}{16}$, then R =

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(A) $\frac{30}{\sqrt{231}}$
(B) $\frac{40}{\sqrt{231}}$
(C) $\frac{20}{\sqrt{231}}$
(D) $\frac{10}{\sqrt{231}}$

Answer: (B) $\frac{40}{\sqrt{231}}$ · The council's preliminary key

Q41 AP EAPCET 2026 · 14 May · Shift 2 MCQ

In ΔABC, if $c = 9,\ s = 10$ and $\Delta = 10\sqrt{2}$, then $\sin\frac{C}{2} =$

(A) $\frac{1}{2}$
(B) $\sqrt{\frac{2}{3}}$
(C) $\frac{\sqrt{3}-1}{2\sqrt{2}}$
(D) $\frac{1}{3}$

Answer: (B) $\sqrt{\frac{2}{3}}$ · The council's preliminary key

Q42 AP EAPCET 2026 · 14 May · Shift 2 MCQ

In a ΔABC, if $r_1 = \frac{12\sqrt{5}}{5}, r_2 = 3\sqrt{5}$ and $r_3 = 4\sqrt{5}$ then $5s^2 =$

(A) $4r^2$
(B) $3R^2$
(C) abc
(D) Δ^2

Answer: (D) Δ^2 · The council's preliminary key

Q43 AP EAPCET 2026 · 13 May · Shift 1 MCQ

$\cos\frac{6\pi}{17}\ \cos\frac{10\pi}{17}\ \cos\frac{12\pi}{17}\ \cos\frac{14\pi}{17} =$

(A) $-\frac{1}{16}$
(B) $\frac{1}{16}$
(C) -16
(D) $\frac{1}{4}$

Answer: (A) $-\frac{1}{16}$ · The council's preliminary key

Q44 AP EAPCET 2026 · 13 May · Shift 1 MCQ

$\tan 81^\circ - \tan 63^\circ - \tan 27^\circ + \tan 9^\circ =$

(A) 2
(B) 3
(C) 4
(D) 5

Answer: (C) 4 · The council's preliminary key

Q45 AP EAPCET 2026 · 13 May · Shift 1 MCQ

For $n \in \mathbb{Z}$, a set of values of θ satisfying $\sec\theta - 1 = (\sqrt{2}-1)\tan\theta$ is

(A) $2n\pi - \frac{\pi}{4}$
(B) $2n\pi + \frac{\pi}{2}$
(C) $(2n+1)\pi + \frac{\pi}{4}$
(D) $2n\pi + \frac{\pi}{4}$

Answer: (D) $2n\pi + \frac{\pi}{4}$ · The council's preliminary key

Q46 AP EAPCET 2026 · 13 May · Shift 1 MCQ

If Δ denotes the area of a triangle ABC and s is its semi-perimeter, then

(A) $\Delta = \frac{s^2}{2}$
(B) $\Delta \leq \frac{s^2}{3\sqrt{3}}$
(C) $\Delta > \frac{s^2}{\sqrt{3}}$
(D) $\Delta = \frac{s^2}{2\sqrt{3}}$

Answer: (B) $\Delta \leq \frac{s^2}{3\sqrt{3}}$ · The council's preliminary key

Q47 AP EAPCET 2026 · 13 May · Shift 1 MCQ

In a triangle ABC, $C = 90^\circ$. If 'r' is the inradius and 'R' is the circumradius of the triangle, then $2(r+R) =$

(A) $a+b$
(B) $b+c$
(C) $a+c$
(D) $a+b+c$

Answer: (A) $a+b$ · The council's preliminary key

Q48 AP EAPCET 2026 · 13 May · Shift 1 MCQ

The sides of a triangle are in the ratio $1 : \sqrt{3} : 2$. Then the angles opposite to these sides are in the ratio

(A) $2 : 3 : 4$
(B) $1 : 2 : 3$
(C) $3 : 2 : 1$
(D) $1 : 3 : 5$

Answer: (B) $1 : 2 : 3$ · The council's preliminary key

Q49 AP EAPCET 2026 · 13 May · Shift 2 MCQ

If $\tan x + \cot x = 6$, then $\tan^3 x + \cot^3 x =$

(A) 192
(B) 180
(C) 198
(D) 186

Answer: (C) 198 · The council's preliminary key

Q50 AP EAPCET 2026 · 13 May · Shift 2 MCQ

$\sin 40^\circ \cos 80^\circ \left(\sec 260^\circ - \frac{1}{\sqrt{3}} \operatorname{cosec} 280^\circ\right) =$

(A) $-\frac{1}{\sqrt{3}}$
(B) $\frac{1}{\sqrt{3}}$
(C) $\frac{4}{\sqrt{3}}$
(D) 4

Answer: (A) $-\frac{1}{\sqrt{3}}$ · The council's preliminary key

Q51 AP EAPCET 2026 · 13 May · Shift 2 MCQ

If a, b, c are non-zero real numbers and α, β are the values of θ satisfying the equation $a\cos\theta + b\sin\theta + c = 0$, then $\sec\alpha + \sec\beta =$

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(A) $-\frac{2ac}{b^2-c^2}$
(B) $\frac{2ac}{b^2-c^2}$
(C) $\frac{2ab}{c^2-a^2}$
(D) $\frac{-2ab}{c^2-a^2}$

Answer: (B) $\frac{2ac}{b^2-c^2}$ · The council's preliminary key

Q52 AP EAPCET 2026 · 13 May · Shift 2 MCQ

The number of solutions of the trigonometric equation $6\sin^2 x - \sin^2 2x = 2\cos 2x + 8$ which are lying in the interval $(-2\pi, 2\pi)$, is

(A) 10
(B) 4
(C) 6
(D) 8

Answer: (B) 4 · Checked by our team

Q53 AP EAPCET 2026 · 13 May · Shift 2 MCQ

In ΔABC, if $\tan\left(\frac{B+C}{2}\right) = 4\tan\left(\frac{B-C}{2}\right)$, $c = 3 = a$, then $A =$

(A) $\frac{\pi}{2}$
(B) $\frac{\pi}{6}$
(C) $\text{Sin}^{-1}\left(\frac{5}{6}\right)$
(D) $\text{Cos}^{-1}\left(\frac{5}{6}\right)$

Answer: (D) $\text{Cos}^{-1}\left(\frac{5}{6}\right)$ · The council's preliminary key

Q54 AP EAPCET 2026 · 13 May · Shift 2 MCQ

If the perimeter of a triangle is 22 and its sides are in the ratio $3:5:3$, then the ratio of radii of circumcircle and incircle of that triangle is

(A) $5:7$
(B) $8:7$
(C) $18:5$
(D) $8:13$

Answer: (C) $18:5$ · The council's preliminary key

Q55 AP EAPCET 2026 · 13 May · Shift 2 MCQ

If the sides of a triangle are in the ratio $2:4:5$ and the radii of circumcircle and incircle of the triangle are respectively 80 and 21, then the sum of the radii of all the excircles of the given triangle is

(A) 231
(B) 131
(C) 341
(D) 390

Answer: (C) 341 · The council's preliminary key

Q56 AP EAPCET 2026 · 12 May · Shift 1 MCQ

If $y = \frac{\tan x}{\tan 3x}$ and $x \neq (2n+1)\frac{\pi}{2}$, then

(A) $y \in \left[\frac{1}{3}, 3\right]$
(B) $y \notin \left[\frac{1}{3}, 3\right]$
(C) $y \in \left[-3, -\frac{1}{3}\right]$
(D) $y \notin \left[-3, -\frac{1}{3}\right]$

Answer: (B) $y \notin \left[\frac{1}{3}, 3\right]$ · The council's preliminary key

Q57 AP EAPCET 2026 · 12 May · Shift 1 MCQ

If A and B are positive acute angles satisfying $3\cos^2 A + 2\cos^2 B = 4$ and $\frac{3\sin A}{\sin B} = \frac{2\cos B}{\cos A}$, then $A + 2B =$

(A) 30°
(B) 45°
(C) 60°
(D) 90°

Answer: (D) 90° · The council's preliminary key

Q58 AP EAPCET 2026 · 12 May · Shift 1 MCQ

For $n \in Z$, the general solution of the equation $\cos 3x \cos^3 x + \sin 3x \sin^3 x = 0$ is

(A) $(2n+1)\frac{\pi}{2}$
(B) $(2n+1)\frac{\pi}{3}$
(C) $(2n+1)\frac{\pi}{4}$
(D) $(2n+1)\frac{\pi}{6}$

Answer: (C) $(2n+1)\frac{\pi}{4}$ · The council's preliminary key

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Q59 AP EAPCET 2026 · 12 May · Shift 1 MCQ

If the circum radius of a triangle PQR is α and $PQ = PR = \alpha$, then angle $P =$

(A) $\frac{\pi}{6}$
(B) $\frac{\pi}{3}$
(C) $\frac{5\pi}{12}$
(D) $\frac{2\pi}{3}$

Answer: (D) $\frac{2\pi}{3}$ · Checked by our team

Q60 AP EAPCET 2026 · 12 May · Shift 1 MCQ

In ΔABC, if $a = 5$, $b = 4$ and $\cos(A - B) = \frac{31}{32}$, then $c =$

(A) 9
(B) 6
(C) 3
(D) $\sqrt{6}$

Answer: (B) 6 · The council's preliminary key

Q61 AP EAPCET 2026 · 12 May · Shift 1 MCQ

In ΔABC, if $a : b : c = 7 : 8 : 9$, then $\cos A : \cos B : \cos C =$

(A) $6 : 5 : 4$
(B) $14 : 11 : 6$
(C) $3 : 4 : 5$
(D) $1 : \sqrt{3} : 2$

Answer: (B) $14 : 11 : 6$ · The council's preliminary key

Q62 AP EAPCET 2026 · 12 May · Shift 2 MCQ

If $\cos x = \tan y$, $\cos y = \tan z$ and $\cos z = \tan x$, then a value of $\sin x$ is

(A) $2\cos 18^\circ$
(B) $\cos 18^\circ$
(C) $2\sin 18^\circ$
(D) $\sin 18^\circ$

Answer: (C) $2\sin 18^\circ$ · The council's preliminary key

Q63 AP EAPCET 2026 · 12 May · Shift 2 MCQ

$\cos^3\theta + \cos^3(\theta + 120^\circ) + \cos^3(\theta - 120^\circ) =$

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(A) $\frac{\sqrt{3}}{2}\cos 3\theta$
(B) $\frac{3}{4}\sec^3\theta$
(C) $\frac{3}{2}\tan^3\theta$
(D) $\frac{3}{4}\cos 3\theta$

Answer: (D) $\frac{3}{4}\cos 3\theta$ · The council's preliminary key

Q64 AP EAPCET 2026 · 12 May · Shift 2 MCQ

$\left(1+\cos\frac{\pi}{8}\right)\left(1+\cos\frac{3\pi}{8}\right)\left(1+\cos\frac{5\pi}{8}\right)\left(1+\cos\frac{7\pi}{8}\right) =$

(A) $\frac{1}{2}$
(B) $\frac{\sqrt{3}}{2}$
(C) $\frac{1}{8}$
(D) $\frac{1+\sqrt{2}}{\sqrt{2}}$

Answer: (C) $\frac{1}{8}$ · The council's preliminary key

Q65 AP EAPCET 2026 · 12 May · Shift 2 MCQ

The general solution of the equation $\sin x - 3\sin 2x + \sin 3x = \cos x - 3\cos 2x + \cos 3x$ is

(A) $n\pi + \frac{\pi}{8}, n \in \mathbb{Z}$
(B) $\frac{n\pi}{2} + \frac{\pi}{8}, n \in \mathbb{Z}$
(C) $(-1)^n\frac{n\pi}{2} + \frac{\pi}{8}, n \in \mathbb{Z}$
(D) $2n\pi + \cos^{-1}\frac{3}{2}, n \in \mathbb{Z}$

Answer: (B) $\frac{n\pi}{2} + \frac{\pi}{8}, n \in \mathbb{Z}$ · The council's preliminary key

Q66 AP EAPCET 2026 · 12 May · Shift 2 MCQ

If $\sin(\pi\cos\theta) = \cos(\pi\sin\theta)$, then $\sin 2\theta =$

(A) $\pm\frac{3}{4}$
(B) $\pm\frac{1}{2}$
(C) $\pm\frac{1}{\sqrt{3}}$
(D) $\pm\sqrt{2}$

Answer: (A) $\pm\frac{3}{4}$ · The council's preliminary key

Q67 AP EAPCET 2026 · 12 May · Shift 2 MCQ

In a triangle ABC, if $\tan\frac{A}{2} : \tan\frac{B}{2} : \tan\frac{C}{2} = 1 : 2 : 4$, then the greatest angle of the triangle is

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(A) $\cos^{-1}\frac{13}{15}$
(B) $\cos^{-1}\frac{1}{15}$
(C) $\pi-\cos^{-1}\frac{1}{15}$
(D) $\pi-\cos^{-1}\frac{13}{15}$

Answer: (C) $\pi-\cos^{-1}\frac{1}{15}$ · The council's preliminary key

Q68 AP EAPCET 2026 · 12 May · Shift 2 MCQ

In a ΔABC, if $s=11$, $b+c=17$, $c+a=15$, then $\tan A=$

(A) $\frac{2\sqrt{66}}{31}$
(B) $\frac{\sqrt{66}}{31}$
(C) $\frac{6\sqrt{11}}{19}$
(D) $\frac{6\sqrt{11}}{31}$

Answer: (A) $\frac{2\sqrt{66}}{31}$ · The council's preliminary key

Q69 AP EAPCET 2026 · 12 May · Shift 2 MCQ

In a triangle ABC, if $a=4$, $b=7$, $c=9$, then $5r+r_1+2r_2+3r_3=$

(A) $24\sqrt{5}$
(B) $26\sqrt{5}$
(C) $30\sqrt{5}$
(D) $25\sqrt{5}$

Answer: (B) $26\sqrt{5}$ · The council's preliminary key

Q70 TS EAPCET 2026 · 11 May · Shift 1 MCQ

If $2\cos\theta+3\sin\theta=3$ and $\tan\theta$ is defined, then $\tan\theta=$

(A) $\frac{5}{12}$
(B) $-\frac{5}{12}$
(C) $\frac{12}{5}$
(D) $-\frac{12}{5}$

Answer: (A) $\frac{5}{12}$ · The council's preliminary key

Q71 TS EAPCET 2026 · 11 May · Shift 1 MCQ

If $\tan A$ and $\tan B$ are the roots of the equation $2x^2-9x-16=0$, then $9\sin^2(A+B)-\cos^2(A+B)=$

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(A) 0
(B) 7
(C) 1
(D) 10

Answer: (C) 1 · The council's preliminary key

Q72 TS EAPCET 2026 · 11 May · Shift 1 MCQ

If $\sin\theta\sin(60^\circ-\theta)\sin(60^\circ+\theta)=\frac{1}{8}$, then $\cos 6\theta=$

(A) $\frac{\sqrt{3}}{2}$
(B) $\frac{1}{2}$
(C) $\frac{1}{\sqrt{2}}$
(D) 0

Answer: (B) $\frac{1}{2}$ · The council's preliminary key

Q73 TS EAPCET 2026 · 11 May · Shift 1 MCQ

If $S=\left\{\theta\in\left[\frac{\pi}{2},\frac{3\pi}{2}\right]:\cos^2\theta+\sin\theta\tan\theta=\cos 2\theta\right\}$, then $\sum_{\theta\in S}(\sin\theta+\cos\theta)=$

(A) 0
(B) 1
(C) -1
(D) 2

Answer: (C) -1 · The council's preliminary key

Q74 TS EAPCET 2026 · 11 May · Shift 1 MCQ

In a triangle ABC, if $\tan\frac{A}{2}:\tan\frac{B}{2}:\tan\frac{C}{2}=1:2:3$, then $\frac{a+3c}{b}=$

(A) 4
(B) 3
(C) 2
(D) 6

Answer: (A) 4 · The council's preliminary key

Q75 TS EAPCET 2026 · 11 May · Shift 1 MCQ

In a triangle ABC, if $r_2+r_3=2R$, then $r+2r_2+2r_3-r_1=$

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(A) $4R$
(B) $2R$
(C) $4R\cos A$
(D) $4R\cos B$

Answer: (B) $2R$ · The council's preliminary key

Q76 TS EAPCET 2026 · 11 May · Shift 2 MCQ

If in $(0, 2\pi)$, $2\cos x + \mathrm{k} = 3\sec x$ and $\cot x = -1$, then the sum of squares of all possible values of k is

(A) 0
(B) $4\sqrt{2}$
(C) 8
(D) 16

Answer: (D) 16 · The council's preliminary key

Q77 TS EAPCET 2026 · 11 May · Shift 2 MCQ

If $\tan(60^\circ + \theta)\tan(60^\circ - \theta) = \dfrac{a\cos^2\theta - b}{a\cos^2\theta - c}$, then $\dfrac{a+c}{b} =$

(A) 3
(B) 5
(C) 7
(D) 9

Answer: (C) 7 · The council's preliminary key

Q78 TS EAPCET 2026 · 11 May · Shift 2 MCQ

a_1, a_2, a_3 are in arithmetic progression in which common difference is 2 and the first term is 2. If $\cos a_1 + \cos a_2 + \cos a_3 = \dfrac{\sin\alpha}{\sin\beta}\cos\gamma$ then $\alpha + \beta =$

(A) 2γ
(B) γ
(C) $\dfrac{\gamma}{2}$
(D) $\gamma + 2$

Answer: (B) γ · The council's preliminary key

Q79 TS EAPCET 2026 · 11 May · Shift 2 MCQ

If $(\alpha, \beta) \subseteq \left(0, \dfrac{\pi}{2}\right)$ is the smallest set containing all the possible solutions of the inequality $\sin x + \cos 2x > 1$, then $\alpha + \beta =$

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(A) $\frac{\pi}{2}$
(B) $\frac{\pi}{3}$
(C) $\frac{\pi}{6}$
(D) $\frac{\pi}{4}$

Answer: (C) $\frac{\pi}{6}$ · The council's preliminary key

Q80 TS EAPCET 2026 · 11 May · Shift 2 MCQ

In a triangle ABC, if $a = \sqrt{3}+1$, $b = \sqrt{3}-1$ and $\angle C = 60^\circ$, then $\cos(A-B) =$

(A) $\frac{\sqrt{3}+1}{2\sqrt{2}}$
(B) $\frac{2}{\sqrt{3}}$
(C) 0
(D) 1

Answer: (C) 0 · The council's preliminary key

Q81 TS EAPCET 2026 · 11 May · Shift 2 MCQ

In a $\triangle ABC$, if $r_1 = 12;\ r_2 = 18;\ r_3 = 36$ then $\Delta =$

(A) 216
(B) 342
(C) 432
(D) 126

Answer: (A) 216 · The council's preliminary key

Q82 TS EAPCET 2026 · 10 May · Shift 1 MCQ

If both α and β lie in $\left(-\frac{\pi}{4}, 0\right)$, $\sin(\alpha+\beta) = -\frac{33}{65}$ and $\sin\alpha = -\frac{3}{5}$, then $\tan(2\alpha+\beta) =$

(A) $-\frac{9}{323}$
(B) $-\frac{9}{125}$
(C) $\frac{75}{323}$
(D) $-\frac{12}{5}$

Answer: (D) $-\frac{12}{5}$ · The council's preliminary key

Q83 TS EAPCET 2026 · 10 May · Shift 1 MCQ

For $A = \frac{\pi}{24}$, if $\frac{\sin 2A + \sin 3A + \sin 4A}{\cos 2A + \cos 3A + \cos 4A} = k$, then $(k+1)^2 =$

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(A) 0
(B) 1
(C) 2
(D) 3

Answer: (C) 2 · The council's preliminary key

Q84 TS EAPCET 2026 · 10 May · Shift 1 MCQ

The sum of all the values of $\theta \in \left[\frac{\pi}{2}, 2\pi\right]$ satisfying the equation $\sin^2\theta \tan\theta + \cos^2\theta \cot\theta = \sin 2\theta$ is

(A) $\frac{15\pi}{4}$
(B) $\frac{15\pi}{2}$
(C) 7π
(D) $\frac{11\pi}{2}$

Answer: (A) $\frac{15\pi}{4}$ · The council's preliminary key

Q85 TS EAPCET 2026 · 10 May · Shift 1 MCQ

In a triangle ABC, if $s = \frac{15}{2}$, $a = 3$, $b = 5$ then $\frac{\sin\frac{B}{2}}{\sin\frac{A}{2}} =$

(A) $\cot\frac{C}{2}$
(B) $2\sin\frac{C}{2}$
(C) $2\operatorname{cosec}\frac{C}{2}$
(D) $\sin\frac{C}{2}$

Answer: (B) $2\sin\frac{C}{2}$ · The council's preliminary key

Q86 TS EAPCET 2026 · 10 May · Shift 1 MCQ

In a triangle ABC, $2\sqrt{r_1r_2 + r_2r_3 + r_3r_1} =$

(A) $8R\sin\frac{A}{2}\sin\frac{B}{2}\sin\frac{C}{2}$
(B) $8R\cos\frac{A}{2}\cos\frac{B}{2}\cos\frac{C}{2}$
(C) $4R\sin\frac{A}{2}\sin\frac{B}{2}\sin\frac{C}{2}$
(D) $4R\cos\frac{A}{2}\cos\frac{B}{2}\cos\frac{C}{2}$

Answer: (B) $8R\cos\frac{A}{2}\cos\frac{B}{2}\cos\frac{C}{2}$ · The council's preliminary key

Q87 TS EAPCET 2026 · 10 May · Shift 2 MCQ

If $(\sin\theta + \cos\theta)^4 + (\sin\theta - \cos\theta)^4 = p - q\left(\sin^4\theta + \cos^4\theta\right)$, then $p + q =$

(A) 6
(B) 4
(C) 10
(D) 8

Answer: (C) 10 · The council's preliminary key

Q88 TS EAPCET 2026 · 10 May · Shift 2 MCQ

$\sin 9^\circ \sin 18^\circ \sin 36^\circ \sin 54^\circ \sin 72^\circ \sin 81^\circ =$

(A) $\frac{10+2\sqrt{5}}{128}$
(B) $\frac{5-\sqrt{5}}{128}$
(C) $\frac{5-\sqrt{5}}{64}$
(D) $\frac{10-2\sqrt{5}}{512}$

Answer: (B) $\frac{5-\sqrt{5}}{128}$ · The council's preliminary key

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Q89 TS EAPCET 2026 · 10 May · Shift 2 MCQ

If $x = \tan A$, $y = \tan B$, $z = \tan C$ and $xy + yz + zx = 1$, then $\frac{(1-x^2)(1-y^2)}{(1+x^2)(1+y^2)} + \frac{(1-z^2)}{(1+z^2)} =$

(A) $\frac{4xy}{(1+x^2)(1+y^2)}$
(B) $\frac{4xyz}{(1+x^2)(1+y^2)(1+z^2)}$
(C) $\frac{4xy}{(1+x^2)(1+y^2)} + \frac{2z}{(1+z^2)}$
(D) 1

Answer: (A) $\frac{4xy}{(1+x^2)(1+y^2)}$ · The council's preliminary key

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Q90 TS EAPCET 2026 · 10 May · Shift 2 MCQ

Number of solutions of the equation $\sin\theta + \sin 3\theta + \sin 5\theta = 0$ in $[-\pi, \pi]$ is

(A) 5
(B) 7
(C) 9
(D) 11

Answer: (B) 7 · The council's preliminary key

Q91 TS EAPCET 2026 · 10 May · Shift 2 MCQ

If 6 and $3 + 3\sqrt{3}$ are two sides of a triangle and the angle between these two sides is 60°, then the circumradius of this triangle is

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(A) 3
(B) $3\sqrt{6}$
(C) 6
(D) $3\sqrt{2}$

Answer: (D) $3\sqrt{2}$ · The council's preliminary key

Q92 TS EAPCET 2026 · 10 May · Shift 2 MCQ

In triangle ABC, $(r_1 - r)\cos\left(\frac{B-C}{2}\right) =$

(A) $(r_1 + r)\sin\frac{A}{2}$
(B) $(r_2 + r_3)\sin\frac{A}{2}$
(C) $(r_1 + r)\sin\frac{(B-C)}{2}$
(D) $(r_2 + r_3)\sin\frac{(B-C)}{2}$

Answer: (A) $(r_1 + r)\sin\frac{A}{2}$ · The council's preliminary key

Q93 TS EAPCET 2026 · 9 May · Shift 1 MCQ

If $\theta = \frac{11\pi}{7}$, then $\frac{1+\cos 8\theta}{\cot^2 4\theta} + \frac{1-\cos 8\theta}{\tan^2 4\theta} =$

(A) $\sin\frac{\pi}{7}$
(B) $\cos\frac{2\pi}{7}$
(C) 2
(D) 0

Answer: (C) 2 · The council's preliminary key

Q94 TS EAPCET 2026 · 9 May · Shift 1 MCQ

If α and β are acute angles and $\cos\alpha\,(1 + \tan\alpha\tan\beta) = 1$, then $\sin\left(\frac{\alpha-2\beta}{3}\right) =$

(A) $\frac{1}{2}$
(B) $\frac{\sqrt{3}}{2}$
(C) $\frac{3}{5}$
(D) 0

Answer: (D) 0 · The council's preliminary key

Q95 TS EAPCET 2026 · 9 May · Shift 1 MCQ

The number of values of θ lying in $[0, 2\pi]$ for which $\sin 3\theta$ attains its maximum when $\left|\sin\theta\,\sin\left(\frac{\pi}{3} - \theta\right)\sin\left(\frac{\pi}{3} + \theta\right)\right| \leq \frac{1}{8}$ is

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(A) 4
(B) 2
(C) 6
(D) 8

Answer: (C) 6 · The council's preliminary key

Q96 TS EAPCET 2026 · 9 May · Shift 1 MCQ

If $\cos 6\theta + \cos 4\theta + \cos 2\theta + 1 = 0$ for $0 \leq \theta \leq \pi$, then $\theta =$

(A) $\frac{\pi}{3}, \frac{\pi}{6}, \frac{3\pi}{4}, \frac{5\pi}{6}, \frac{7\pi}{6}$
(B) $\frac{\pi}{2}, \frac{\pi}{6}, \frac{3\pi}{4}, \frac{7\pi}{6}$
(C) $\frac{\pi}{2}, \frac{\pi}{4}, \frac{\pi}{6}, \frac{3\pi}{4}, \frac{5\pi}{6}$
(D) $\frac{\pi}{2}, \frac{\pi}{4}, \frac{3\pi}{5}, \frac{\pi}{6}$

Answer: (C) $\frac{\pi}{2}, \frac{\pi}{4}, \frac{\pi}{6}, \frac{3\pi}{4}, \frac{5\pi}{6}$ · The council's preliminary key

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Q97 TS EAPCET 2026 · 9 May · Shift 1 MCQ

In a triangle ABC, if $a = 2$, $\sin A = \frac{2}{3}$, $B = \frac{\pi}{3}$, then $\sqrt{5}b - 3c =$

(A) -3
(B) $3\sqrt{3}$
(C) $\sqrt{5} - \sqrt{3}$
(D) 2

Answer: (A) -3 · The council's preliminary key

Q98 TS EAPCET 2026 · 9 May · Shift 1 MCQ

In a triangle ABC, if $(b - c)\cos\frac{A}{2} = k \sin\frac{B - C}{2}$, then $\frac{k}{\sin A} =$

(A) b
(B) $2R \sin A$
(C) $2R$
(D) $a + c$

Answer: (C) $2R$ · The council's preliminary key

Q99 TS EAPCET 2026 · 9 May · Shift 2 MCQ

$4 \sin\frac{\pi}{6} \sin\frac{2\pi}{6} \sin\frac{3\pi}{6} \sin\frac{4\pi}{6} \sin\frac{5\pi}{6} =$

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(A) $\cos\frac{\pi}{3}\cos\frac{2\pi}{3}$
(B) $\sin\frac{\pi}{3}\sin\frac{2\pi}{3}$
(C) $\sin\frac{\pi}{3}\cos\frac{2\pi}{3}$
(D) $\cos\frac{\pi}{3}\sin\frac{2\pi}{3}$

Answer: (B) $\sin\frac{\pi}{3}\sin\frac{2\pi}{3}$ · The council's preliminary key

Q100 TS EAPCET 2026 · 9 May · Shift 2 MCQ

If $x = \sin 18^\circ$ and $y = \tan 22\frac{1}{2}^\circ$, then $4x(4x+2) =$

(A) $(y+1)^2$
(B) $3y(y+1)$
(C) y^2+y
(D) y^2+2y+3

Answer: (D) y^2+2y+3 · The council's preliminary key

Q101 TS EAPCET 2026 · 9 May · Shift 2 MCQ

If $\alpha, \beta \in \left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$, $\cos^4\alpha = \frac{1}{16}$, $\sin^4\beta = \frac{1}{16}$ then $\cos\alpha + \cos\beta =$

(A) $\sqrt{2}\cos 15^\circ$
(B) $\sqrt{2}\sin 15^\circ$
(C) $-\sqrt{2}\cos 15^\circ$
(D) $-\sqrt{2}\sin 15^\circ$

Answer: (A) $\sqrt{2}\cos 15^\circ$ · The council's preliminary key

Q102 TS EAPCET 2026 · 9 May · Shift 2 MCQ

Number of solutions of the equation $3^{2\sin^2 x} + 3^{2\cos^2 x} = 6$ lying in the interval $[-\pi, \pi]$ is

(A) 2
(B) 4
(C) 3
(D) 1

Answer: (B) 4 · The council's preliminary key

Q103 TS EAPCET 2026 · 9 May · Shift 2 MCQ

In a triangle ABC, if $\frac{a}{b+c} + \frac{c}{a+b} = 1$ and $s = r + a$, then $\sin A + \sin B + \sin C =$

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(A) $\frac{3\sqrt{3}}{2}$
(B) $1+\sqrt{2}$
(C) $\frac{3+\sqrt{3}}{2}$
(D) $\frac{\sqrt{3}+2}{3}$

Answer: (C) $\frac{3+\sqrt{3}}{2}$ · The council's preliminary key

Q104 TS EAPCET 2026 · 9 May · Shift 2 MCQ

In a triangle ABC, if $r-r_1+r_2+r_3=2\sqrt{2}R$, $r+r_1-r_2+r_3=0$ and $b=2\sqrt{2}$, then $a+c=$

(A) 5
(B) 6
(C) $2+\sqrt{2}$
(D) 4

Answer: (D) 4 · The council's preliminary key

Q105 AP EAPCET 2025 · 27 May · Shift 1 MCQ

If $\cos x+\sin x=\frac{1}{2}$ and $0<x<\pi$, then $\tan x=$

(A) $\frac{1+\sqrt{7}}{4}$
(B) $\frac{1-\sqrt{7}}{4}$
(C) $\frac{4-\sqrt{7}}{3}$
(D) $-\frac{(4+\sqrt{7})}{3}$

Answer: (D) $-\frac{(4+\sqrt{7})}{3}$ · The council's preliminary key

Q106 AP EAPCET 2025 · 27 May · Shift 1 MCQ

If $\sin\theta+2\cos\theta=1$ and θ belongs to 4th quadrant (not lying on the coordinate axes) then $7\cos\theta+6\sin\theta=$

(A) $\frac{4}{17}$
(B) 2
(C) $\frac{7}{17}$
(D) $\frac{4}{5}$

Answer: (B) 2 · The council's preliminary key

Q107 AP EAPCET 2025 · 27 May · Shift 1 MCQ

If A and B are acute angles satisfying $3\cos^2 A+2\cos^2 B=4$ and $\frac{3\sin A}{\sin B}=\frac{2\cos B}{\cos A}$, then $A+2B=$

(A) $\frac{\pi}{2}$
(B) $\frac{\pi}{3}$
(C) $\frac{\pi}{4}$
(D) $\frac{\pi}{6}$

Answer: (A) $\frac{\pi}{2}$ · The council's preliminary key

Q108 AP EAPCET 2025 · 27 May · Shift 1 MCQ

Statement-I : In the interval $[0, 2\pi]$, the number of common solutions of the equations $2\sin^2\theta - \cos 2\theta = 0$ and $2\cos^2\theta - 3\sin\theta = 0$ is two.

Statement-II : The number of solutions of $2\cos^2\theta - 3\sin\theta = 0$ in $[0, \pi]$ is two.

(A) Statement-I and Statement-II are both true
(B) Statement-I is true, Statement-II is false
(C) Statement-I is false, Statement-II is true
(D) Statement-I and Statement-II are both false

Answer: (A) Statement-I and Statement-II are both true · The council's preliminary key

Q109 AP EAPCET 2025 · 27 May · Shift 1 MCQ

In ΔABC, if A, B, C are in arithmetic progression then

$$\sqrt{a^2 - ac + c^2} \cdot \cos\left(\frac{A - C}{2}\right) =$$

(A) $a + c$
(B) $\frac{a+c}{2}$
(C) $\frac{a+c-b}{2}$
(D) $a - c$

Answer: (B) $\frac{a+c}{2}$ · The council's preliminary key

Q110 AP EAPCET 2025 · 27 May · Shift 1 MCQ

If in ΔABC, $B = 45^\circ$, $a = 2(\sqrt{3} + 1)$ and area of ΔABC is $6 + 2\sqrt{3}$ sq.units, then the side $b =$

(A) $8 - 4\sqrt{3}$
(B) $\sqrt{2}(\sqrt{3} + 1)$
(C) $4\sqrt{2}$
(D) 4

Answer: (D) 4 · The council's preliminary key

Q111 AP EAPCET 2025 · 27 May · Shift 1 MCQ

In a ΔABC, if $\sin^2 B = \sin A$ and $2\cos^2 A = 3\cos^2 B$, then the triangle is

(A) acute angled
(B) obtuse angled
(C) right angled
(D) equilateral

Answer: (B) obtuse angled · The council's preliminary key

Q112 AP EAPCET 2025 · 26 May · Shift 1 MCQ

$\sin\frac{\pi}{12}\sin\frac{2\pi}{12}\sin\frac{3\pi}{12}\sin\frac{4\pi}{12}\sin\frac{5\pi}{12}\sin\frac{6\pi}{12} =$

(A) $\frac{\sqrt{3}}{16\sqrt{2}}$
(B) $\frac{\sqrt{3}}{8\sqrt{2}}$
(C) $\frac{1}{32}$
(D) $\frac{1}{16}$

Answer: (A) $\frac{\sqrt{3}}{16\sqrt{2}}$ · The council's preliminary key

Q113 AP EAPCET 2025 · 26 May · Shift 1 MCQ

If $\tan\left(\frac{\pi}{4}+\alpha\right) = \tan^3\left(\frac{\pi}{4}+\beta\right)$, then $\tan(\alpha+\beta)\cot(\alpha-\beta) =$

(A) $\sec^2 2\beta + \tan^2 2\beta$
(B) $\text{cosec}^2 2\beta + \cot^2 2\beta$
(C) $2(\sec^2 2\beta + \tan^2 2\beta)$
(D) $4(\sec^2 2\beta + \tan^2 2\beta)$

Answer: (C) $2(\sec^2 2\beta + \tan^2 2\beta)$ · The council's preliminary key

Q114 AP EAPCET 2025 · 26 May · Shift 1 MCQ

If $A+B+C+D = 2\pi$, then $\sin A + \sin B + \sin C + \sin D =$

(A) $4\sin\left(\frac{A+B}{4}\right)\sin\left(\frac{A+C}{4}\right)\sin\left(\frac{A+D}{4}\right)$
(B) $4\sin\left(\frac{A+B}{2}\right)\cos\left(\frac{A+C}{4}\right)\cos\left(\frac{A+D}{4}\right)$
(C) $4\sin\left(\frac{A+B}{2}\right)\sin\left(\frac{A+C}{2}\right)\sin\left(\frac{A+D}{2}\right)$
(D) $4\sin\left(\frac{A+B}{2}\right)\sin\left(\frac{A+C}{4}\right)\sin\left(\frac{A+D}{4}\right)$

Answer: (C) $4\sin\left(\frac{A+B}{2}\right)\sin\left(\frac{A+C}{2}\right)\sin\left(\frac{A+D}{2}\right)$ · The council's preliminary key

Q115 AP EAPCET 2025 · 26 May · Shift 1 MCQ

If $0 \le x \le 3$ and $0 \le y \le 3$, then the number of solutions (x, y) of the equation

$$\left(\sqrt{\sin^2 x - \sin x + \frac{1}{2}}\right)^{2^{\sec^2 y}} = 1$$

is

(A) 5
(B) 2
(C) 6
(D) 1

Answer: (B) 2 · The council's preliminary key

Q116 AP EAPCET 2025 · 26 May · Shift 1 MCQ

In triangle ABC, if $C = 120^\circ$, $c = \sqrt{19}$ and $b = 3$, then $a =$

(A) 4
(B) 5
(C) 2
(D) $\sqrt{5}$

Answer: (C) 2 · The council's preliminary key

Q117 AP EAPCET 2025 · 26 May · Shift 1 MCQ

In a ΔABC, $2A + C = 300^\circ$. If the circumradius of the ΔABC is eight times its inradius then $\sin\frac{C}{2} =$

(A) $\frac{1}{2}$
(B) $\frac{1}{4}$
(C) $\frac{3}{4+\sqrt{3}}$
(D) $\frac{1}{\sqrt{2}+1}$

Answer: (B) $\frac{1}{4}$ · The council's preliminary key

Q118 AP EAPCET 2025 · 26 May · Shift 1 MCQ

In ΔABC, if $a = 5$, $b = 4$ and $\cos(A - B) = \frac{31}{32}$, then $c =$

(A) 8
(B) $\sqrt{41}$
(C) 6
(D) $\sqrt{24}$

Answer: (C) 6 · The council's preliminary key

Q119 AP EAPCET 2025 · 26 May · Shift 2 MCQ

$$\left(4\cos^2\frac{\pi}{20} - 1\right)\left(4\cos^2\frac{3\pi}{20} - 1\right)\left(4\cos^2\frac{5\pi}{20} + 1\right)\left(4\cos^2\frac{7\pi}{20} - 1\right)\left(4\cos^2\frac{9\pi}{20} - 1\right) =$$

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(A) 1
(B) $\frac{1}{2}$
(C) 2
(D) 3

Answer: (D) 3 · The council's preliminary key

Q120 AP EAPCET 2025 · 26 May · Shift 2 MCQ

If A and B are the values such that $(A+B)$ and $(A-B)$ are not odd multiples of $\frac{\pi}{2}$ and $2\tan(A+B)=3\tan(A-B)$, then $\sin A\cos A=$

(A) $\sin B\cos B$
(B) $5\sin B\cos B$
(C) $\sin 2B$
(D) $\cos 2B$

Answer: (B) $5\sin B\cos B$ · The council's preliminary key

Q121 AP EAPCET 2025 · 26 May · Shift 2 MCQ

If $\cos^3 80^\circ+\cos^3 40^\circ-\cos^3 20^\circ=k$, then $\frac{4k}{3}=$

(A) $\sin\left(\frac{4\pi}{3}\right)$
(B) $\cos\left(\frac{2\pi}{3}\right)$
(C) $\tan\left(\frac{\pi}{3}\right)$
(D) $\sec\left(\frac{2\pi}{3}\right)$

Answer: (B) $\cos\left(\frac{2\pi}{3}\right)$ · The council's preliminary key

Q122 AP EAPCET 2025 · 26 May · Shift 2 MCQ

The number of solutions of the equation $4\cos 2\theta\cos 3\theta=\sec\theta$ in the interval $[0,2\pi]$ is

(A) 12
(B) 8
(C) 16
(D) 4

Answer: (A) 12 · The council's preliminary key

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Q123 AP EAPCET 2025 · 26 May · Shift 2 MCQ

In a triangle ABC, if $A = 30^\circ$ and

$$\frac{b}{\left(\sqrt{3}+1\right)^2 + 2\left(\sqrt{2}-1\right)} = \frac{c}{\left(\sqrt{3}+1\right)^2 - 2\left(\sqrt{2}-1\right)},$$

then B =

(A) 60°
(B) 97.5°
(C) 75°
(D) 52.5°

Answer: (B) 97.5° · The council's preliminary key

Q124 AP EAPCET 2025 · 26 May · Shift 2 MCQ

In ΔABC if the line joining the circumcentre and the incentre is parallel to BC, then $\cos B + \cos C =$

(A) $\frac{1}{2}$
(B) $\frac{3}{4}$
(C) 1
(D) $\frac{3}{2}$

Answer: (C) 1 · The council's preliminary key

Q125 AP EAPCET 2025 · 26 May · Shift 2 MCQ

In a triangle ABC, if $r_1 : r_2 = 3 : 4$ and $r_2 : r_3 = 2 : 3$, then $a : b : c =$

(A) $2 : 3 : 4$
(B) $3 : 4 : 5$
(C) $4 : 5 : 6$
(D) $5 : 6 : 7$

Answer: (D) $5 : 6 : 7$ · The council's preliminary key

Q126 AP EAPCET 2025 · 24 May · Shift 1 MCQ

$\tan\frac{2\pi}{7} \cdot \tan\frac{4\pi}{7} + \tan\frac{4\pi}{7} \cdot \tan\frac{\pi}{7} + \tan\frac{\pi}{7} \cdot \tan\frac{2\pi}{7} =$

(A) 7
(B) -7
(C) 3
(D) -3

Answer: (B) -7 · The council's preliminary key

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Q127 AP EAPCET 2025 · 24 May · Shift 1 MCQ

$\cos 13^\circ \sin 17^\circ \sin 21^\circ \cos 47^\circ =$

(A) $\frac{1}{32}(1+\sqrt{2}-\sqrt{3})$
(B) $\frac{1}{16}(1+\sqrt{3}+\sqrt{5})$
(C) $\frac{1}{16}(2+\sqrt{3}-\sqrt{5})$
(D) $\frac{1}{32}(1+2\sqrt{3}-\sqrt{5})$

Answer: (D) $\frac{1}{32}(1+2\sqrt{3}-\sqrt{5})$ · The council's preliminary key

Q128 AP EAPCET 2025 · 24 May · Shift 1 MCQ

$\sin\frac{\pi}{5}+\sin\frac{2\pi}{5}+\sin\frac{3\pi}{5}+\sin\frac{4\pi}{5}=$

(A) 1
(B) $\sqrt{5}$
(C) $\frac{1}{4}(\sqrt{5}+1)\left(\sqrt{10+2\sqrt{5}}\right)$
(D) $\frac{1}{4}(\sqrt{5}-1)\left(\sqrt{10+2\sqrt{5}}\right)$

Answer: (C) $\frac{1}{4}(\sqrt{5}+1)\left(\sqrt{10+2\sqrt{5}}\right)$ · The council's preliminary key

Q129 AP EAPCET 2025 · 24 May · Shift 1 MCQ

The sum of the solutions of $\cos x\sqrt{16\sin^2 x}=1$ in $(0,2\pi)$ is

(A) 2π
(B) $\frac{13\pi}{2}$
(C) $\frac{17\pi}{4}$
(D) 4π

Answer: (D) 4π · Checked by our team

Q130 AP EAPCET 2025 · 24 May · Shift 1 MCQ

In a triangle ABC, if a, b, c are in arithmetic progression and the angle A is twice the angle C, then $\cos A:\cos B:\cos C=$

(A) $2:3:4$
(B) $3:4:8$
(C) $2:9:12$
(D) $1:9:6$

Answer: (C) $2:9:12$ · The council's preliminary key

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Q131 AP EAPCET 2025 · 24 May · Shift 1 MCQ

In a triangle ABC, if A, B and C are in arithmetic progression, $rr_3 = r_1r_2$ and $c = 10$, then $a^2 + b^2 + c^2 =$

(A) 128
(B) 288
(C) 392
(D) 200

Answer: (D) 200 · The council's preliminary key

Q132 AP EAPCET 2025 · 24 May · Shift 1 MCQ

In a ΔABC, $\frac{2(r_1 + r_3)}{ac(1 + \cos B)} =$

(A) $\frac{\Delta}{b}$
(B) $\frac{b}{\Delta}$
(C) $\frac{2\Delta}{a+b+c}$
(D) $\frac{a+b+c}{2\Delta}$

Answer: (B) $\frac{b}{\Delta}$ · The council's preliminary key

Q133 AP EAPCET 2025 · 23 May · Shift 1 MCQ

If α is the maximum value and β is the minimum value of $\cos^2 \frac{x}{4} + \sin \frac{x}{4}$, $x \in R$, then $\alpha - \beta =$

(A) $\frac{1}{4}$
(B) $\frac{9}{4}$
(C) 2
(D) 3

Answer: (B) $\frac{9}{4}$ · The council's preliminary key

Q134 AP EAPCET 2025 · 23 May · Shift 1 MCQ

If A and B are positive acute angles satisfying $3\cos^2 A + 2\cos^2 B = 4$ and $\frac{3\sin A}{\sin B} = \frac{2\cos B}{\cos A}$, then $A + 2B =$

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(A) 30°
(B) 45°
(C) 60°
(D) 90°

Answer: (D) 90° · The council's preliminary key

Q135 AP EAPCET 2025 · 23 May · Shift 1 MCQ

If $\sin x - \sin y = \frac{27}{65}$ and $\cos x - \cos y = \frac{-21}{65}$, then $\sin(x+y) =$

(A) $-\frac{63}{65}$
(B) $\frac{16}{65}$
(C) $\frac{63}{65}$
(D) $-\frac{16}{65}$

Answer: (C) $\frac{63}{65}$ · The council's preliminary key

Q136 AP EAPCET 2025 · 23 May · Shift 1 MCQ

The number of solutions of the equation $\sec x \cos 5x + 1 = 0$ in the interval $[0, 2\pi]$ is

(A) 5
(B) 8
(C) 10
(D) 12

Answer: (B) 8 · The council's preliminary key

Q137 AP EAPCET 2025 · 23 May · Shift 1 MCQ

In triangle ABC if $\cos A \cos B + \sin A \sin B \sin C = 1$, then $\sin A + \sin B + \sin C =$

(A) $\frac{2+\sqrt{3}}{2}$
(B) $1 + \sqrt{2}$
(C) $\frac{2\sqrt{3}-1}{2}$
(D) $\frac{3+\sqrt{3}}{2}$

Answer: (B) $1 + \sqrt{2}$ · The council's preliminary key

Q138 AP EAPCET 2025 · 23 May · Shift 1 MCQ

In ΔABC, if $a : b : c = 4 : 5 : 6$, then $\frac{\cos A + 3\cos C}{\cos B} =$

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(A) 1
(B) 4
(C) 2
(D) 3

Answer: (C) 2 · The council's preliminary key

Q139 AP EAPCET 2025 · 23 May · Shift 1 MCQ

In triangle ABC, if $a = 6$, $b = 8$ and $c = 10$, then $\frac{2r_2r_3}{rr_1} =$

(A) $b + c$
(B) $c + a$
(C) $a + b$
(D) $a + b + c$

Answer: (A) $b + c$ · The council's preliminary key

Q140 AP EAPCET 2025 · 23 May · Shift 2 MCQ

$\operatorname{cosec} 48^\circ + \operatorname{cosec} 96^\circ + \operatorname{cosec} 192^\circ + \operatorname{cosec} 384^\circ =$

(A) $4\sqrt{3}$
(B) $-4\sqrt{3}$
(C) 0
(D) 1

Answer: (C) 0 · The council's preliminary key

Q141 AP EAPCET 2025 · 23 May · Shift 2 MCQ

If $\sqrt{3}\cos\theta + \sin\theta > 0$ then

(A) $-\frac{\pi}{2} < \theta < \frac{\pi}{2}$
(B) $-\frac{\pi}{3} < \theta < \frac{2\pi}{3}$
(C) $-\frac{2\pi}{3} < \theta < \frac{\pi}{3}$
(D) $-\frac{\pi}{6} < \theta < \frac{5\pi}{6}$

Answer: (B) $-\frac{\pi}{3} < \theta < \frac{2\pi}{3}$ · The council's preliminary key

Q142 AP EAPCET 2025 · 23 May · Shift 2 MCQ

If $\cos\theta = \frac{-3}{5}$ and θ does not lie in second quadrant, then $\tan\frac{\theta}{2} =$

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(A) 2
(B) 1
(C) -2
(D) -1

Answer: (C) -2 · The council's preliminary key

Q143 AP EAPCET 2025 · 23 May · Shift 2 MCQ

The general solution satisfying both the equations $\sin x = -\frac{3}{5}$ and $\cos x = -\frac{4}{5}$ is

(A) $x = (2n+1)\pi + \text{Tan}^{-1}\left(\frac{3}{4}\right), n \in Z$
(B) $x = 2n\pi + \text{Tan}^{-1}\left(\frac{3}{4}\right), n \in Z$
(C) $x = n\pi + \text{Tan}^{-1}\left(\frac{3}{4}\right), n \in Z$
(D) $x = n\pi \pm \text{Tan}^{-1}\left(\frac{3}{4}\right), n \in Z$

Answer: (A) $x = (2n+1)\pi + \text{Tan}^{-1}\left(\frac{3}{4}\right), n \in Z$ · The council's preliminary key

Q144 AP EAPCET 2025 · 23 May · Shift 2 MCQ

In ΔABC, if $a = 8$, $b = 10$, $c = 12$, then $\frac{r}{R} =$

(A) $\frac{8}{15}$
(B) $\frac{7}{16}$
(C) $\frac{3}{5}$
(D) $\frac{5}{8}$

Answer: (B) $\frac{7}{16}$ · The council's preliminary key

Q145 AP EAPCET 2025 · 23 May · Shift 2 MCQ

In triangle ABC, if a = 13, b = 8, c = 7, then cos (B + C) =

(A) $\frac{11}{13}$
(B) $\frac{23}{26}$
(C) $\frac{3}{4}$
(D) $\frac{1}{2}$

Answer: (D) $\frac{1}{2}$ · The council's preliminary key

Q146 AP EAPCET 2025 · 23 May · Shift 2 MCQ

In a triangle ABC, if $(r_1 - r_3)(r_1 - r_2) - 2r_2r_3 = 0$, then $a^2 - b^2 =$

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(A) $c^2 + \frac{b^2}{4}$

(B) c^2

(C) abc

(D) $\frac{b+a}{c}$

Answer: (B) c^2 · The council's preliminary key

Q147 AP EAPCET 2025 · 22 May · Shift 1 MCQ

If $A + B = \frac{\pi}{4}$, then $\frac{\cos B - \sin B}{\cos B + \sin B} =$

(A) $\sin A$

(B) $\cos A$

(C) $\tan A$

(D) $\cot A$

Answer: (C) $\tan A$ · The council's preliminary key

Q148 AP EAPCET 2025 · 22 May · Shift 1 MCQ

If $7\cos\theta - \sin\theta = 5$ and $\tan\theta > 0$, then $\tan\theta =$

(A) $\frac{7}{12}$

(B) $\frac{3}{4}$

(C) $\frac{4}{3}$

(D) $\frac{12}{7}$

Answer: (B) $\frac{3}{4}$ · The council's preliminary key

Q149 AP EAPCET 2025 · 22 May · Shift 1 MCQ

$\sin^3 10^\circ + \sin^3 50^\circ - \sin^3 70^\circ =$

(A) $\frac{-3}{8}$

(B) $\frac{3}{4}$

(C) $\frac{\sqrt{3}}{2}$

(D) $\frac{-1}{3}$

Answer: (A) $\frac{-3}{8}$ · The council's preliminary key

Q150 AP EAPCET 2025 · 22 May · Shift 1 MCQ

The number of solutions of $\sin 2x + \cos 4x = 2$ in the interval $[-\pi, \pi]$ is

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(A) 3
(B) 2
(C) 0
(D) 1

Answer: (C) 0 · The council's preliminary key

Q151 AP EAPCET 2025 · 22 May · Shift 1 MCQ

The horizontal distance between a tower and a builidng is $10\sqrt{3}$ units. If the angle of depression of the foot of the building from the top of the tower is 60° and the angle of elevation of the top of the building from the foot of the tower is 30°, then the sum of the heights of the tower and the building is

(A) 60
(B) 50
(C) 40
(D) 30

Answer: (C) 40 · The council's preliminary key

Q152 AP EAPCET 2025 · 22 May · Shift 1 MCQ

In a ΔABC, $A - B = 120^\circ$, $R = 8r$, then $\dfrac{1+\cos C}{1-\cos C} =$

(A) 16
(B) 14
(C) 15
(D) 10

Answer: (C) 15 · The council's preliminary key

Q153 AP EAPCET 2025 · 22 May · Shift 1 MCQ

In ΔABC, $\sqrt{\dfrac{rr_2}{r_3r_1}} =$

(A) $(r_3 - r_2)(r_1 - r_2)$
(B) $r_3 + r_1$
(C) $\dfrac{b}{r_3 - r_1}$
(D) $\dfrac{b}{r_3 + r_1}$

Answer: (D) $\dfrac{b}{r_3 + r_1}$ · The council's preliminary key

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Q154 AP EAPCET 2025 · 22 May · Shift 2 MCQ

If α, β are the acute angles such that $\frac{\sin\alpha}{\sin\beta} = \frac{6}{5}$ and $\frac{\cos\alpha}{\cos\beta} = \frac{9}{5\sqrt{5}}$ then $\sin\alpha =$

(A) $\frac{4}{5}$
(B) $\frac{3}{5}$
(C) $\frac{3}{4}$
(D) $\frac{2}{3}$

Answer: (A) $\frac{4}{5}$ · The council's preliminary key

Q155 AP EAPCET 2025 · 22 May · Shift 2 MCQ

If $2\sin x - \cos 2x = 1$, then $(3 - 2\sin^2 x) =$

(A) $\sqrt{3}$
(B) $-\sqrt{3}$
(C) $\sqrt{5}$
(D) $-\sqrt{5}$

Answer: (C) $\sqrt{5}$ · The council's preliminary key

Q156 AP EAPCET 2025 · 22 May · Shift 2 MCQ

If $\left(\frac{\sin 3\theta}{\sin\theta}\right)^2 - \left(\frac{\cos 3\theta}{\cos\theta}\right)^2 = a\cos b\theta$, then a : b =

(A) $4:1$
(B) $8:1$
(C) $3:2$
(D) $2:1$

Answer: (A) $4:1$ · The council's preliminary key

Q157 AP EAPCET 2025 · 22 May · Shift 2 MCQ

If $x \neq (2n+1)\frac{\pi}{4}$, then the general solution of $\cos x + \cos 3x = \sin x + \sin 3x$ is

(A) $n\pi + \frac{\pi}{8}$
(B) $n\pi \pm \frac{\pi}{8}$
(C) $\frac{n\pi}{2} \pm \frac{\pi}{8}$
(D) $\frac{n\pi}{2} + \frac{\pi}{8}$

Answer: (D) $\frac{n\pi}{2} + \frac{\pi}{8}$ · The council's preliminary key

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Q158 AP EAPCET 2025 · 22 May · Shift 2 MCQ

If the sides a,b,c of the triangle ABC are in harmonic progression, then $\text{cosec}^2 A/2$, $\text{cosec}^2 B/2$, $\text{cosec}^2 C/2$ are in

(A) Arithmetico-geometric progression
(B) Arithmetic progression
(C) Geometric progression
(D) Harmonic progression

Answer: (B) Arithmetic progression · The council's preliminary key

Q159 AP EAPCET 2025 · 22 May · Shift 2 MCQ

In Δ ABC, if r = 3 and R = 5 then $\frac{1}{ab} + \frac{1}{bc} + \frac{1}{ca} =$

(A) $\frac{1}{30}$
(B) $\frac{12}{15}$
(C) $\frac{1}{15}$
(D) $\frac{5}{36}$

Answer: (A) $\frac{1}{30}$ · The council's preliminary key

Q160 AP EAPCET 2025 · 22 May · Shift 2 MCQ

An aeroplane is flying at a constant speed, parallel to the horizontal ground at a height of 5 kms. A person on the ground observed that the angle of elevation of the plane is changed from 15° to 30° in the duration of 50 seconds, then the speed of the plane (in kmph) is

(A) 100
(B) 720
(C) 360
(D) 540

Answer: (B) 720 · The council's preliminary key

Q161 AP EAPCET 2025 · 21 May · Shift 1 MCQ

If $630^\circ < \theta < 810^\circ$ and $\tan\theta = -\frac{7}{24}$, then $\cos\left(\frac{\theta}{4}\right) =$

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(A) $-\sqrt{\frac{7+5\sqrt{2}}{10\sqrt{2}}}$

(B) $\sqrt{\frac{7+5\sqrt{2}}{2\sqrt{2}}}$

(C) $-\sqrt{\frac{5\sqrt{2}-7}{10\sqrt{2}}}$

(D) $\sqrt{\frac{5\sqrt{2}-7}{2\sqrt{2}}}$

Answer: (A) $-\sqrt{\frac{7+5\sqrt{2}}{10\sqrt{2}}}$ · The council's preliminary key

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Q162 AP EAPCET 2025 · 21 May · Shift 1 MCQ

For $\theta \in \left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$ if $2\cos\theta + \sin\theta = 1$, and $7\cos\theta + 6\sin\theta = k$, then the possible values of k are

(A) $8, -2$

(B) $6, 2$

(C) $12, 4$

(D) $7, 6$

Answer: (B) $6, 2$ · The council's preliminary key

Q163 AP EAPCET 2025 · 21 May · Shift 1 MCQ

$$\sum_{k=0}^{12} \frac{1}{\sin\left((k+1)\frac{\pi}{6}+\frac{\pi}{4}\right)\sin\left(\frac{k\pi}{6}+\frac{\pi}{4}\right)} =$$

(A) $2(\sqrt{3}+1)$

(B) $2(3-\sqrt{3})$

(C) $2(2-\sqrt{3})$

(D) $2(\sqrt{3}-1)$

Answer: (D) $2(\sqrt{3}-1)$ · The council's preliminary key

Q164 AP EAPCET 2025 · 21 May · Shift 1 MCQ

The number of solutions of the equation $2\sin^2\theta - 3\cos^2\theta = \sin\theta\cos\theta$ lying in the interval $(-\pi, \pi)$ is

(A) 2

(B) 4

(C) 3

(D) 1

Answer: (B) 4 · The council's preliminary key

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Q165 AP EAPCET 2025 · 21 May · Shift 1 MCQ

In ΔABC, the sum of the lengths of two sides is x and the product of those lengths is y. If c is the length of its third side and $x^2 - c^2 = y$, then the circumradius of that triangle is

(A) $\frac{c}{\sqrt{3}}$
(B) $\frac{c}{3}$
(C) $\frac{y}{\sqrt{3}}$
(D) $\frac{3y}{2}$

Answer: (A) $\frac{c}{\sqrt{3}}$ · The council's preliminary key

Q166 AP EAPCET 2025 · 21 May · Shift 1 MCQ

If the area of a triangle ABC is $4\sqrt{5}$ sq. units, length of the side CA is 6 units and $\tan\frac{B}{2} = \frac{\sqrt{5}}{4}$, then its smallest side is of length

(A) 5 units
(B) 4 units
(C) 3 units
(D) 6 units

Answer: (C) 3 units · The council's preliminary key

Q167 AP EAPCET 2025 · 21 May · Shift 1 MCQ

In a ΔABC if $r_1 = 2r_2 = 3r_3$ then $a : b$ is

(A) $3 : 5$
(B) $5 : 3$
(C) $4 : 5$
(D) $5 : 4$

Answer: (D) $5 : 4$ · The council's preliminary key

Q168 AP EAPCET 2025 · 21 May · Shift 2 MCQ

$$\frac{1}{\sin 1^\circ \sin 2^\circ} + \frac{1}{\sin 2^\circ \sin 3^\circ} + \frac{1}{\sin 3^\circ \sin 4^\circ} + \ldots + \frac{1}{\sin 89^\circ \sin 90^\circ} =$$

(A) $\frac{\sin 1^\circ}{\tan 1^\circ}$
(B) $\frac{1}{\sin^2 1^\circ}$
(C) $\frac{\cot 1^\circ}{\sin 1^\circ}$
(D) $\frac{\tan 1^\circ}{\cos 1^\circ}$

Answer: (C) $\frac{\cot 1^\circ}{\sin 1^\circ}$ · The council's preliminary key

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Q169 AP EAPCET 2025 · 21 May · Shift 2 MCQ

$\cos^3\frac{\pi}{8}\cos\frac{3\pi}{8}+\sin^3\frac{\pi}{8}\sin\frac{3\pi}{8}=$

(A) $\frac{1}{2\sqrt{2}}$

(B) $\frac{1}{2}$

(C) $\frac{1}{\sqrt{2}}$

(D) $\frac{1}{4}$

Answer: (A) $\frac{1}{2\sqrt{2}}$ · The council's preliminary key

Q170 AP EAPCET 2025 · 21 May · Shift 2 MCQ

If $A+B+C=\frac{\pi}{4}$, then $\sin 4A+\sin 4B+\sin 4C=$

(A) $4\cos 2A\cos 2B\cos 2C$

(B) $4\sin 2A\sin 2B\sin 2C$

(C) $1+4\sin 2A\sin 2B\sin 2C$

(D) $1+4\cos 2A\cos 2B\cos 2C$

Answer: (A) $4\cos 2A\cos 2B\cos 2C$ · The council's preliminary key

Q171 AP EAPCET 2025 · 21 May · Shift 2 MCQ

Number of solutions of the equation $\cos\theta+\cos 2\theta-\sqrt{3}(\sin\theta+\sin 2\theta)+1=0$ lying in the interval $(0,2\pi)$ is

(A) 3

(B) 6

(C) 5

(D) 4

Answer: (D) 4 · The council's preliminary key

Q172 AP EAPCET 2025 · 21 May · Shift 2 MCQ

In a triangle ABC, if $\sin\frac{A}{2}=\frac{1}{4}\sqrt{\frac{3}{5}}$, a = 2, c = 5 and b is an integer, then the area (in sq. units) of triangle ABC is

(A) $\frac{\sqrt{297}}{4}$
(B) $\frac{\sqrt{231}}{4}$
(C) $\frac{\sqrt{385}}{4}$
(D) $\frac{\sqrt{185}}{4}$

Answer: (B) $\frac{\sqrt{231}}{4}$ · The council's preliminary key

Q173 AP EAPCET 2025 · 21 May · Shift 2 MCQ

In a ΔABC if $a + c = 5b$, then $\cot\frac{A}{2}\cot\frac{C}{2} =$

(A) 2
(B) $\frac{1}{2}$
(C) $\frac{3}{2}$
(D) $\frac{2}{3}$

Answer: (C) $\frac{3}{2}$ · The council's preliminary key

Q174 AP EAPCET 2025 · 21 May · Shift 2 MCQ

In a triangle ABC, if $r_1 = 3$, $r_2 = 4$, $r_3 = 6$, then $b =$

(A) $2\sqrt{6}$
(B) $\frac{5\sqrt{6}}{3}$
(C) $\frac{7\sqrt{6}}{3}$
(D) $3\sqrt{6}$

Answer: (A) $2\sqrt{6}$ · The council's preliminary key

Q175 AP EAPCET 2025 · 21 May · Shift 2 MCQ

If the angles between the sides of the triangle ABC formed by A(2, 3, 5), B(−1, 3, 2) and C(3, 5, −2) are α, β and γ, then $\sin^2\alpha + \sin^2\beta + \sin^2\gamma =$

(A) 1
(B) 2
(C) $\frac{3}{2}$
(D) $\frac{1}{2}$

Answer: (B) 2 · The council's preliminary key

Q176 TS EAPCET 2025 · 4 May · Shift 1 MCQ

If $\cos\theta + \sin\theta = \sqrt{2}\cos\theta$ and $0 < \theta < \frac{\pi}{2}$ then $\sec 2\theta + \tan 2\theta =$

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(A) $\cot\theta$
(B) $\tan\theta$
(C) $\cos\theta$
(D) $\sin\theta$

Answer: (A) $\cot\theta$ · The council's preliminary key

Q177 TS EAPCET 2025 · 4 May · Shift 1 MCQ

If $0 \le A, B \le \frac{\pi}{4}$ and $\cot A + \cot B + \tan A + \tan B = \cot A \cot B - \tan A \tan B$ then $\sin(A+B) =$

(A) 0
(B) $\frac{1}{2}$
(C) $\frac{1}{\sqrt{2}}$
(D) $\frac{\sqrt{3}}{2}$

Answer: (C) $\frac{1}{\sqrt{2}}$ · The council's preliminary key

Q178 TS EAPCET 2025 · 4 May · Shift 1 MCQ

If the extreme values of the function $f(x) = \left(2\sqrt{6}+1\right)\cos x + \left(2\sqrt{2}-\sqrt{3}\right)\sin x - 6$ are m and M, then $\sqrt{|M^2 - m^2|} =$

(A) 6
(B) 12
(C) $6\sqrt{2}$
(D) $12\sqrt{3}$

Answer: (B) 12 · The council's preliminary key

Q179 TS EAPCET 2025 · 4 May · Shift 1 MCQ

Number of solutions of the equation $\tan^2 x + 3\cot^2 x = 2\sec^2 x$ lying in the interval $[0, 2\pi]$ is

(A) 3
(B) 4
(C) 5
(D) 6

Answer: (B) 4 · The council's preliminary key

Q180 TS EAPCET 2025 · 4 May · Shift 1 MCQ

If $a = 3$, $b = 5$, $c = 7$ are the sides of a triangle ABC, then $\cot A + \cot B + \cot C =$

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(A) $\frac{15\sqrt{3}}{4}$
(B) $\frac{7}{\sqrt{3}}$
(C) $\frac{83}{15\sqrt{3}}$
(D) $\frac{83\sqrt{3}}{15}$

Answer: (C) $\frac{83}{15\sqrt{3}}$ · The council's preliminary key

Q181 TS EAPCET 2025 · 4 May · Shift 1 MCQ

Let p_1, p_2, p_3 be the altitudes of a triangle ABC drawn through the vertices A, B, C respectively. If $r_1 = 4$, $r_2 = 6$, $r_3 = 12$ are the ex-radii of triangle ABC then $\frac{1}{p_1^2} + \frac{1}{p_2^2} + \frac{1}{p_3^2} =$

(A) $\frac{25}{72}$
(B) $\frac{25}{144}$
(C) $\frac{25}{288}$
(D) $\frac{25}{216}$

Answer: (C) $\frac{25}{288}$ · The council's preliminary key

Q182 TS EAPCET 2025 · 4 May · Shift 2 MCQ

If $\tan\left(\frac{\pi}{4} + \frac{\alpha}{2}\right) = \tan^3\left(\frac{\pi}{4} + \frac{\beta}{2}\right)$, then $\frac{3+\sin^2\beta}{1+3\sin^2\beta} =$

(A) $\frac{\cos\beta}{\cos\alpha}$
(B) $\frac{\cos^3\alpha}{\sin^3\beta}$
(C) $\frac{\sin\alpha}{\sin\beta}$
(D) $\frac{\cos\alpha}{\cos\beta}$

Answer: (C) $\frac{\sin\alpha}{\sin\beta}$ · The council's preliminary key

Q183 TS EAPCET 2025 · 4 May · Shift 2 MCQ

If $\cos\alpha = \frac{l\cos\beta + m}{l + m\cos\beta}$, then $\left(\frac{\tan\frac{\alpha}{2}}{\tan\frac{\beta}{2}}\right)^2 =$

(A) $\frac{l-m}{l+m}$
(B) $\frac{l+m}{l-m}$
(C) $\frac{l^2-m^2}{l^2+m^2}$
(D) $\sqrt{\frac{l-m}{l+m}}$

Answer: (A) $\frac{l-m}{l+m}$ · The council's preliminary key

Q184 TS EAPCET 2025 · 4 May · Shift 2 MCQ

If the angular bisector of the angle A of the triangle ABC meets its circumcircle at E and the opposite side BC at D, then $DE\cos\frac{A}{2}=$

(A) $\frac{a^2}{2(b+c)}$
(B) $\frac{b^2}{c+a}$
(C) $\frac{a}{b+c}$
(D) $\frac{2a}{a+b+c}$

Answer: (A) $\frac{a^2}{2(b+c)}$ · The council's preliminary key

Q185 TS EAPCET 2025 · 4 May · Shift 2 MCQ

In a triangle ABC, $a=5$, $b=4$ and $\tan\frac{C}{2}=\sqrt{\frac{7}{9}}$, then its inradius $r=$

(A) $\frac{\sqrt{7}}{2}$
(B) $2\sqrt{7}$
(C) $\frac{9}{\sqrt{7}}$
(D) $\frac{4}{\sqrt{7}}$

Answer: (A) $\frac{\sqrt{7}}{2}$ · The council's preliminary key

Q186 TS EAPCET 2025 · 3 May · Shift 1 MCQ

If $3\sin\theta+4\cos\theta=3$ and $\theta\neq(2n+1)\frac{\pi}{2}$ then $\sin 2\theta=$

(A) $\frac{336}{625}$
(B) $-\frac{7}{25}$
(C) $\frac{24}{25}$
(D) $-\frac{336}{625}$

Answer: (D) $-\frac{336}{625}$ · The council's preliminary key

Q187 TS EAPCET 2025 · 3 May · Shift 1 MCQ

$$\frac{\cos 15^\circ\cos^2 22\frac{1}{2}^\circ-\sin 75^\circ\sin^2 52\frac{1}{2}^\circ}{\cos^2 15^\circ-\cos^2 75^\circ}=$$

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(A) 1
(B) $\frac{1}{2}$
(C) $\frac{1}{4}$
(D) $\frac{1}{8}$

Answer: (C) $\frac{1}{4}$ · The council's preliminary key

Q188 TS EAPCET 2025 · 3 May · Shift 1 MCQ

$16 \sin 12^\circ \cos 18^\circ \sin 48^\circ =$

(A) $\sqrt{10-2\sqrt{5}}$
(B) $\sqrt{10+2\sqrt{5}}$
(C) $\sqrt{5}-1$
(D) $\sqrt{5}+1$

Answer: (A) $\sqrt{10-2\sqrt{5}}$ · The council's preliminary key

Q189 TS EAPCET 2025 · 3 May · Shift 1 MCQ

Number of solutions of the equation $\sin^2\theta + 2\cos^2\theta - \sqrt{3}\sin\theta\cos\theta = 2$ lying in the interval $(-\pi, \pi)$ is

(A) 2
(B) 3
(C) 4
(D) 5

Answer: (B) 3 · The council's preliminary key

Q190 TS EAPCET 2025 · 3 May · Shift 1 MCQ

In a triangle ABC, if $c^2 - a^2 = b(\sqrt{3}c - b)$ and $b^2 - a^2 = c(c-a)$, then $\angle ACB =$

(A) 30°
(B) 60°
(C) 45°
(D) 90°

Answer: (D) 90° · The council's preliminary key

Q191 TS EAPCET 2025 · 3 May · Shift 1 MCQ

Let ABC be a triangle right angled at B. If $a = 13$ and $c = 84$, then $r + R =$

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(A) 42.5
(B) 169
(C) 98
(D) 48.5

Answer: (D) 48.5 · The council's preliminary key

Q192 TS EAPCET 2025 · 3 May · Shift 2 MCQ

If $2\sin\theta + 3\cos\theta = 2$ and $\theta \neq (2n+1)\frac{\pi}{2}$ then $\sin\theta + \cos\theta =$

(A) $\frac{5}{13}$
(B) $\frac{3}{5}$
(C) $\frac{7}{13}$
(D) $\frac{4}{5}$

Answer: (C) $\frac{7}{13}$ · The council's preliminary key

Q193 TS EAPCET 2025 · 3 May · Shift 2 MCQ

If $\sin A = -\frac{24}{25}$, $\cos B = \frac{15}{17}$, A does not belong to 4th quadrant and B does not belong to 1st quadrant then $(A+B)$ lies in the quadrant

(A) 1st quadrant
(B) 2nd quadrant
(C) 3rd quadrant
(D) 4th quadrant

Answer: (C) 3rd quadrant · The council's preliminary key

Q194 TS EAPCET 2025 · 3 May · Shift 2 MCQ

$4\cos\frac{7\theta}{2}\cos\frac{3\theta}{2}\sin 5\theta =$

(A) $\sin 10\theta + \sin 7\theta - \sin 3\theta$
(B) $\sin 10\theta + \sin 7\theta - \sin 5\theta$
(C) $\sin 10\theta + \sin 7\theta + \sin 3\theta$
(D) $\sin 10\theta + \sin 7\theta + \sin 5\theta$

Answer: (C) $\sin 10\theta + \sin 7\theta + \sin 3\theta$ · The council's preliminary key

Q195 TS EAPCET 2025 · 3 May · Shift 2 MCQ

If $x \in (-\pi, \pi)$ then the number of solutions of the equation

$2\sin x \sin 3x \sin 5x + \sin 5x \cos 4x = 0$ is

(A) 14
(B) 12
(C) 13
(D) 9

Answer: (C) 13 · The council's preliminary key

Q196 TS EAPCET 2025 · 3 May · Shift 2 MCQ

If $a = 3$, $b = 5$, $c = 7$ are the sides of a triangle ABC, then its circumradius is

(A) $\frac{7}{\sqrt{3}}$
(B) $\frac{15}{2}$
(C) $\frac{15\sqrt{3}}{4}$
(D) $\frac{\sqrt{3}}{2}$

Answer: (A) $\frac{7}{\sqrt{3}}$ · The council's preliminary key

Q197 TS EAPCET 2025 · 3 May · Shift 2 MCQ

Two ships leave a port at the same time. One of them moves in the direction of E50°N with a speed of 8 kmph and the other moves in the direction of S20°E with a speed of 12 kmph. Then the distance between the ships at the end of 2 hours is (in km)

(A) $8\sqrt{7}$
(B) 34
(C) $8\sqrt{19}$
(D) 32

Answer: (C) $8\sqrt{19}$ · The council's preliminary key

Q198 TS EAPCET 2025 · 2 May · Shift 1 MCQ

If $\sin A = -\frac{60}{61}$, $\cot B = -\frac{40}{9}$ and neither A nor B is in 4th quadrant then

$6\cot A + 4\sec B =$

(A) $\frac{26}{5}$
(B) $-\frac{26}{5}$
(C) -3
(D) 3

Answer: (C) -3 · The council's preliminary key

Q199 TS EAPCET 2025 · 2 May · Shift 1 MCQ

If $A + B + C = 4S$ then $\sin(2S - A) + \sin(2S - B) + \sin(2S - C) - \sin 2S =$

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(A) $4\cos\frac{A}{2}\cos\frac{B}{2}\cos\frac{C}{2}$

(B) $4\sin\frac{A}{2}\cos\frac{B}{2}\cos\frac{C}{2}$

(C) $4\cos\frac{A}{2}\sin\frac{B}{2}\cos\frac{C}{2}$

(D) $4\sin\frac{A}{2}\sin\frac{B}{2}\sin\frac{C}{2}$

Answer: (D) $4\sin\frac{A}{2}\sin\frac{B}{2}\sin\frac{C}{2}$ · The council's preliminary key

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Q200 TS EAPCET 2025 · 2 May · Shift 1 MCQ

The general solution of the equation $\sqrt{6-5\cos x+7\sin^2 x}-\cos x=0$ also satisfies the equation

(A) $\tan x+\cot x=2$

(B) $\cot x+\operatorname{cosec} x=1$

(C) $\tan x+\sec x=1$

(D) $\sec x+\operatorname{cosec} x=2$

Answer: (C) $\tan x+\sec x=1$ · The council's preliminary key

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Q201 TS EAPCET 2025 · 2 May · Shift 1 MCQ

If p_1,p_2,p_3 are the altitudes and $a=4,\ b=5,\ c=6$ are the sides of a triangle ABC, then $\frac{1}{p_1^2}+\frac{1}{p_2^2}+\frac{1}{p_3^2}=$

(A) $\frac{77}{225}$

(B) $\frac{44}{225}$

(C) $\frac{308}{225}$

(D) $\frac{22}{75}$

Answer: (B) $\frac{44}{225}$ · The council's preliminary key

Q202 TS EAPCET 2025 · 2 May · Shift 1 MCQ

Let the angles A, B, C of a triangle ABC be in arithmetic progression. If the exradii r_1,r_2,r_3 of triangle ABC satisfy the condition $r_3^2=r_1r_2+r_2r_3+r_3r_1$, then $b=$

(A) $\frac{2a}{\sqrt{3}}$

(B) $\sqrt{2}a$

(C) $\sqrt{3}a$

(D) a

Answer: (C) $\sqrt{3}a$ · The council's preliminary key

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Q203 TS EAPCET 2025 · 2 May · Shift 2 MCQ

If $5\sin\theta + 3\cos\left|\theta + \frac{\pi}{3}\right| + 3$ lies between α and β (including α, β also), then $(\alpha - \beta)(\alpha + \beta - 6) =$

(A) $28 - 5\sqrt{3}$

(B) 0

(C) 3

(D) $28 + 5\sqrt{3}$

Answer: (B) 0 · The council's preliminary key

Q204 TS EAPCET 2025 · 2 May · Shift 2 MCQ

$$\frac{\sin 1^\circ + \sin 2^\circ + \ldots + \sin 89^\circ}{2(\cos 1^\circ + \cos 2^\circ + \ldots + \cos 44^\circ) + 1} =$$

(A) 2

(B) $\frac{1}{\sqrt{2}}$

(C) $\frac{1}{2}$

(D) $\sqrt{2}$

Answer: (B) $\frac{1}{\sqrt{2}}$ · The council's preliminary key

Q205 TS EAPCET 2025 · 2 May · Shift 2 MCQ

If $3\sin(\alpha - \beta) = 5\cos(\alpha + \beta)$ and $\alpha + \beta \neq \frac{\pi}{2}$, then $\dfrac{\tan\left(\frac{\pi}{4} - \alpha\right)}{\tan\left(\frac{\pi}{4} - \beta\right)} =$

(A) 0

(B) -4

(C) $-\frac{1}{4}$

(D) $\frac{1}{2}$

Answer: (C) $-\frac{1}{4}$ · The council's preliminary key

Q206 TS EAPCET 2025 · 2 May · Shift 2 MCQ

$1 + \cos x + \cos^2 x + \cos^3 x + \ldots$ to $\infty = 4 + 2\sqrt{3}$, then $x =$

(A) $\frac{n\pi}{6}$

(B) $(4n \pm 1)\frac{\pi}{3}$

(C) $(12n \pm 1)\frac{\pi}{6}$

(D) $(3n \pm 1)\frac{\pi}{3}$

Answer: (C) $(12n \pm 1)\frac{\pi}{6}$ · The council's preliminary key

Q207 TS EAPCET 2025 · 2 May · Shift 2 MCQ

In a triangle ABC, if $r_1 = 4$, $r_2 = 8$ and $r_3 = 24$, then $a : b : c =$

(A) $4 : 7 : 9$
(B) $2 : 3 : 5$
(C) $1 : 2 : 6$
(D) $6 : 2 : 1$

Answer: (A) $4 : 7 : 9$ · The council's preliminary key

Q208 TS EAPCET 2025 · 2 May · Shift 2 MCQ

In a triangle ABC, $(r_2 + r_3)\operatorname{cosec}^2\left(\frac{A}{2}\right) =$

(A) $4R\cot\left(\frac{A}{2}\right)$
(B) $2R\cot^2\left(\frac{A}{2}\right)$
(C) $\dfrac{4R}{\tan^2\left(\frac{A}{2}\right)}$
(D) $\dfrac{2R}{\tan\left(\frac{A}{2}\right)}$

Answer: (C) $\dfrac{4R}{\tan^2\left(\frac{A}{2}\right)}$ · The council's preliminary key

Q209 AP EAPCET 2024 · 23 May · Shift 1 MCQ

$\tan^2\frac{\pi}{16} + \tan^2\frac{2\pi}{16} + \tan^2\frac{3\pi}{16} + \tan^2\frac{4\pi}{16} + \tan^2\frac{5\pi}{16} + \tan^2\frac{6\pi}{16} + \tan^2\frac{7\pi}{16} =$

(A) 35
(B) 41
(C) 37
(D) 33

Answer: (A) 35 · The council's preliminary key

Q210 AP EAPCET 2024 · 23 May · Shift 1 MCQ

$\sin^2 18^\circ + \sin^2 24^\circ + \sin^2 36^\circ + \sin^2 42^\circ + \sin^2 78^\circ + \sin^2 90^\circ + \sin^2 96^\circ + \sin^2 102^\circ + \sin^2 138^\circ + \sin^2 162^\circ =$

(A) $\frac{11}{2}$
(B) $\frac{9}{2}$
(C) 5
(D) 4

Answer: (A) $\frac{11}{2}$ · The council's preliminary key

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Q211 AP EAPCET 2024 · 23 May · Shift 1 MCQ

If A, B, C are the angles of a triangle, then $\frac{\sin A+\sin B+\sin C}{\sin^2\frac{A}{2}-\sin^2\frac{B}{2}+\sin^2\frac{C}{2}-1}=$

(A) $-2\tan\frac{B}{2}$

(B) $-2\cot\frac{B}{2}$

(C) $2\tan\frac{B}{2}$

(D) $2\cot\frac{B}{2}$

Answer: (B) $-2\cot\frac{B}{2}$ · The council's preliminary key

Q212 AP EAPCET 2024 · 23 May · Shift 1 MCQ

The general solution of $\cot\frac{x}{2}-\cot x=\operatorname{cosec}\frac{x}{2}$ is

(A) $\left\{2n\pi+\frac{\pi}{3}\mid n\in Z\right\}$

(B) $\left\{4n\pi+\frac{\pi}{3}\mid n\in Z\right\}$

(C) $\left\{2n\pi+\frac{2\pi}{3}\mid n\in Z\right\}$

(D) $\left\{4n\pi\pm\frac{2\pi}{3}\mid n\in Z\right\}$

Answer: (D) $\left\{4n\pi\pm\frac{2\pi}{3}\mid n\in Z\right\}$ · The council's preliminary key

Q213 AP EAPCET 2024 · 23 May · Shift 1 MCQ

In ΔABC, $a^2\sin 2B+b^2\sin 2A=$

(A) $2ab\cos A$

(B) $2ab\sin A$

(C) $2ab\sin C$

(D) $2ab\cos C$

Answer: (C) $2ab\sin C$ · The council's preliminary key

Q214 AP EAPCET 2024 · 23 May · Shift 1 MCQ

In ΔABC, $\frac{r_2(r_1+r_3)}{\sqrt{r_1r_2+r_2r_3+r_3r_1}}=$

ΔABC ಆ, $\frac{r_2(r_1+r_3)}{\sqrt{r_1r_2+r_2r_3+r_3r_1}}=$

(A) a
(B) b
(C) c
(D) s

Answer: (B) b · The council's preliminary key

Q215 AP EAPCET 2024 · 23 May · Shift 1 MCQ

In ΔABC, $(r_2 + r_3)\,\text{cosec}^2\frac{A}{2} =$

(A) $4R$
(B) $4R\,\cot^2\frac{A}{2}$
(C) $4R\,\tan^2\frac{A}{2}$
(D) $R\,\tan^2\frac{A}{2}$

Answer: (B) $4R\,\cot^2\frac{A}{2}$ · The council's preliminary key

Q216 AP EAPCET 2024 · 22 May · Shift 1 MCQ

If M_1 and M_2 are the maximum values of $\frac{1}{11\cos 2x + 60\sin 2x + 69}$ and $3\cos^2 5x + 4\sin^2 5x$ respectively, then $\frac{M_1}{M_2} =$

(A) $\frac{65}{2}$
(B) $\frac{1}{32}$
(C) $\frac{8}{3}$
(D) 2

Answer: (B) $\frac{1}{32}$ · The council's preliminary key

Q217 AP EAPCET 2024 · 22 May · Shift 1 MCQ

$4\cos\frac{\pi}{7}\cos\frac{\pi}{5}\cos\frac{2\pi}{7}\cos\frac{2\pi}{5}\cos\frac{4\pi}{7} =$

(A) $-\frac{1}{8}$
(B) $\frac{1}{32}$
(C) $-\frac{1}{32}$
(D) $\frac{1}{8}$

Answer: (A) $-\frac{1}{8}$ · The council's preliminary key

Q218 AP EAPCET 2024 · 22 May · Shift 1 MCQ

In a triangle ABC, if A, B, C are in arithmetic progression and $\cos A + \cos B + \cos C = \frac{1+\sqrt{2}+\sqrt{3}}{2\sqrt{2}}$, then $\tan A =$

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(A) $\sqrt{3}$
(B) $2+\sqrt{3}$
(C) 1
(D) $2-\sqrt{3}$

Answer: (B) $2+\sqrt{3}$ · The council's preliminary key

Q219 AP EAPCET 2024 · 22 May · Shift 1 MCQ

The general solution of the equation $\tan x+\tan 2x-\tan 3x=0$ is

(A) $\{x \mid x=n\pi \pm \frac{\pi}{3} \text{ or } \frac{n\pi}{2}, n \in Z\}$
(B) $\{x \mid x=n\pi \pm \frac{\pi}{3} \text{ or } n\pi, n \in Z\}$
(C) $\{x \mid x=n\pi \pm \frac{\pi}{3} \text{ or } \frac{n\pi}{2} \text{ or } n\pi, n \in Z\}$
(D) $\{x \mid x=n\pi \pm \frac{\pi}{6} \text{ or } \frac{n\pi}{2}, n \in Z\}$

Answer: (B) $\{x \mid x=n\pi \pm \frac{\pi}{3} \text{ or } n\pi, n \in Z\}$ · The council's preliminary key

Q220 AP EAPCET 2024 · 22 May · Shift 1 MCQ

In ΔABC, if $b+c : c+a : a+b = 7 : 8 : 9$, then the smallest angle (in radians) of that triangle is

(A) $\cos^{-1}\left(\frac{4}{5}\right)$
(B) $\frac{\pi}{3}$
(C) $\cos^{-1}\left(\frac{3}{5}\right)$
(D) $\frac{\pi}{4}$

Answer: (A) $\cos^{-1}\left(\frac{4}{5}\right)$ · The council's preliminary key

Q221 AP EAPCET 2024 · 22 May · Shift 1 MCQ

In Δ ABC, if $(a+c)^2=b^2+3ca$, then $\frac{a+c}{2R}=$

(A) $\sqrt{3}/2$
(B) $\sqrt{3}\cdot\cos\left(\frac{A-C}{2}\right)$
(C) $\cos\left(\frac{A-C}{2}\right)$
(D) $\sin\left(\frac{A-C}{2}\right)$

Answer: (B) $\sqrt{3}\cdot\cos\left(\frac{A-C}{2}\right)$ · The council's preliminary key

Q222 AP EAPCET 2024 · 22 May · Shift 1 MCQ

In ΔABC, if A, B, C are in arithmetic progression, $\Delta=\frac{\sqrt{3}}{2}$ and $r_1r_2=r_3r$, then $R=$

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(A) $\sqrt{3}$
(B) 2
(C) 1
(D) $\sqrt{2}$

Answer: (C) 1 · The council's preliminary key

Q223 AP EAPCET 2024 · 22 May · Shift 2 MCQ

$\tan\alpha + 2\tan 2\alpha + 4\tan 4\alpha + 8\cot 8\alpha =$

(A) $\sin\alpha$
(B) $\cos\alpha$
(C) $\tan\alpha$
(D) $\cot\alpha$

Answer: (D) $\cot\alpha$ · The council's preliminary key

Q224 AP EAPCET 2024 · 22 May · Shift 2 MCQ

$\tan 9^\circ - \tan 27^\circ - \tan 63^\circ + \tan 81^\circ =$

(A) 4
(B) 3
(C) 2
(D) 1

Answer: (A) 4 · The council's preliminary key

Q225 AP EAPCET 2024 · 22 May · Shift 2 MCQ

$\cos 6^\circ \sin 24^\circ \cos 72^\circ =$

(A) $-\frac{1}{8}$
(B) $-\frac{1}{4}$
(C) $\frac{1}{8}$
(D) $\frac{1}{4}$

Answer: (C) $\frac{1}{8}$ · The council's preliminary key

Q226 AP EAPCET 2024 · 22 May · Shift 2 MCQ

The values of x in $(-\pi, \pi)$ which satisfy the equation $8^{1+\cos^2 x+\cos^4 x+\cdots} = 4^3$ are

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(A) $\pm\frac{\pi}{4}, \pm\frac{3\pi}{4}$
(B) $\pm\frac{\pi}{6}, \frac{\pi}{3}$
(C) $\pm\frac{\pi}{8}$
(D) $\frac{\pi}{3}$

Answer: (A) $\pm\frac{\pi}{4}, \pm\frac{3\pi}{4}$ · The council's preliminary key

Q227 AP EAPCET 2024 · 22 May · Shift 2 MCQ

In a ΔABC if $a = 13$, $b = 14$, $c = 15$ then $r_1 =$

(A) $\frac{23}{2}$
(B) $\frac{21}{2}$
(C) $\frac{25}{2}$
(D) $\frac{26}{3}$

Answer: (B) $\frac{21}{2}$ · The council's preliminary key

Q228 AP EAPCET 2024 · 22 May · Shift 2 MCQ

In a ΔABC, if $r : R : r_2 = 1 : 3 : 7$ then $\sin(A + C) + \sin B =$

(A) 0
(B) $\sqrt{3}$
(C) 1
(D) 2

Answer: (D) 2 · The council's preliminary key

Q229 AP EAPCET 2024 · 22 May · Shift 2 MCQ

In ΔABC, $(r_1 + r_2)\,\text{cosec}^2\frac{C}{2} =$

(A) $2R\cot^2\frac{C}{2}$
(B) $4R\tan^2\frac{C}{2}$
(C) $4R\cot^2\frac{C}{2}$
(D) $2R\tan^2\frac{C}{2}$

Answer: (C) $4R\cot^2\frac{C}{2}$ · The council's preliminary key

Q230 AP EAPCET 2024 · 21 May · Shift 1 MCQ

If $\sin x + \sin y = \alpha,\ \cos x + \cos y = \beta$ then $\text{cosec}(x + y) =$

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(A) $\frac{\beta^2-\alpha^2}{\beta^2+\alpha^2}$
(B) $\frac{2\alpha\beta}{\beta^2-\alpha^2}$
(C) $\frac{\beta^2+\alpha^2}{2\alpha\beta}$
(D) $\frac{2\alpha\beta}{\beta^2+\alpha^2}$

Answer: (C) $\frac{\beta^2+\alpha^2}{2\alpha\beta}$ · The council's preliminary key

Q231 AP EAPCET 2024 · 21 May · Shift 1 MCQ

If $P+Q+R=\frac{\pi}{4}$, then $\cos\left(\frac{\pi}{8}-P\right)+\cos\left(\frac{\pi}{8}-Q\right)+\cos\left(\frac{\pi}{8}-R\right)=$

(A) $4\cos\frac{P}{2}\cos\frac{Q}{2}\cos\frac{R}{2}-\cos\frac{\pi}{8}$
(B) $4\cos\frac{P}{2}\cos\frac{Q}{2}\sin\frac{R}{2}+\cos\frac{\pi}{8}$
(C) $4\sin\frac{P}{2}\sin\frac{Q}{2}\sin\frac{R}{2}-\cos\frac{\pi}{8}$
(D) $4\sin\frac{P}{2}\cos\frac{Q}{2}\sin\frac{R}{2}+\cos\frac{\pi}{8}$

Answer: (A) $4\cos\frac{P}{2}\cos\frac{Q}{2}\cos\frac{R}{2}-\cos\frac{\pi}{8}$ · The council's preliminary key

Q232 AP EAPCET 2024 · 21 May · Shift 1 MCQ

For $a\in R-\{0\}$, if $a\cos x+a\sin x+a=2K+1$ has a solution, then K lies in the interval

(A) $\left[\frac{a-1-\sqrt{2}a}{2},\frac{a-1+\sqrt{2}a}{2}\right]$
(B) $\left[\frac{a+1-\sqrt{2}}{2},\frac{a+1+\sqrt{2}}{2}\right]$
(C) $\left[\frac{a-1-\sqrt{2}}{2},\frac{a-1+\sqrt{2}}{2}\right]$
(D) $\left[-\frac{(\sqrt{2a^2+2a+1}+1)}{2},\frac{(\sqrt{2a^2+2a+1}-1)}{2}\right]$

Answer: (A) $\left[\frac{a-1-\sqrt{2}a}{2},\frac{a-1+\sqrt{2}a}{2}\right]$ · The council's preliminary key

Q233 AP EAPCET 2024 · 21 May · Shift 1 MCQ

If the general solution set of $\sin x+3\sin 3x+\sin 5x=0$ is S, then $\{\sin\alpha/\alpha\in S\}=$

(A) $\{1,-1,0\}$
(B) $\left\{\frac{1}{2},\frac{-1}{2},0,1,-1\right\}$
(C) $\left\{\frac{\sqrt{3}}{2},0,\frac{-\sqrt{3}}{2}\right\}$
(D) $\left\{1,-1,\frac{\sqrt{3}}{2},0,\frac{-\sqrt{3}}{2}\right\}$

Answer: (C) $\left\{\frac{\sqrt{3}}{2},0,\frac{-\sqrt{3}}{2}\right\}$ · The council's preliminary key

Q234 AP EAPCET 2024 · 21 May · Shift 1 MCQ

In a triangle, if the angles are in the ratio $3:2:1$, then the ratio of its sides is

(A) $1:2:3$
(B) $2:\sqrt{3}:1$
(C) $3:\sqrt{2}:1$
(D) $1:\sqrt{3}:3$

Answer: (B) $2:\sqrt{3}:1$ · The council's preliminary key

Q235 AP EAPCET 2024 · 21 May · Shift 1 MCQ

In a triangle ABC, if BC = 5, CA = 6, AB = 7, then the length of the median drawn from B onto AC is

(A) 5
(B) $7\sqrt{5}$
(C) $7\sqrt{2}$
(D) $2\sqrt{7}$

Answer: (D) $2\sqrt{7}$ · The council's preliminary key

Q236 AP EAPCET 2024 · 21 May · Shift 1 MCQ

In ΔABC, if $AB:BC:CA=6:4:5$, then $R:r=$

(A) $16:9$
(B) $16:7$
(C) $12:7$
(D) $12:9$

Answer: (B) $16:7$ · The council's preliminary key

Q237 AP EAPCET 2024 · 21 May · Shift 2 MCQ

If A, B, C are the angles of triangle then $\sin 2A-\sin 2B+\sin 2C=$

(A) $4\cos A\cos B\sin C$
(B) $4\cos A\sin B\cos C$
(C) $4\cos A\sin B\cos C-1$
(D) $4\sin A\cos B\sin C$

Answer: (B) $4\cos A\sin B\cos C$ · The council's preliminary key

Q238 AP EAPCET 2024 · 21 May · Shift 2 MCQ

Assertion (A): If $A=10^\circ, B=16^\circ, C=19^\circ$, then $\tan 2A\tan 2B+\tan 2B\tan 2C+\tan 2C\tan 2A=1$

Reason (R): If $A+B+C=180^\circ$, $\cot\frac{A}{2}+\cot\frac{B}{2}+\cot\frac{C}{2}=\cot\frac{A}{2}\cot\frac{B}{2}\cot\frac{C}{2}$

Which of the following is correct?

(A) Both (A) and (R) are true and (R) is the correct explanation of (A)
(B) Both (A) and (R) are true and (R) is NOT correct explanation of (A)
(C) (A) is true, (R) is false
(D) (A) is false, (R) is true

Answer: (A) Both (A) and (R) are true and (R) is the correct explanation of (A) · The council's preliminary key

Q239 AP EAPCET 2024 · 21 May · Shift 2 MCQ

If α is in the 3rd Quadrant, β is in the 2nd Quadrant such that $\tan\alpha = \frac{1}{7}$, $\sin\beta = \frac{1}{\sqrt{10}}$, then $\sin(2\alpha+\beta) =$

(A) $\frac{3\times\sqrt{10}}{25}$
(B) $\frac{3}{\sqrt{10}}$
(C) $\frac{3}{25\sqrt{10}}$
(D) $\frac{\sqrt{10}}{3\times25}$

Answer: (C) $\frac{3}{25\sqrt{10}}$ · The council's preliminary key

Q240 AP EAPCET 2024 · 21 May · Shift 2 MCQ

Number of solutions of the trigonometric equation $2\tan 2\theta - \cot 2\theta + 1 = 0$ lying in the interval $[0, \pi]$ is

(A) 2
(B) 3
(C) 4
(D) 5

Answer: (C) 4 · The council's preliminary key

Q241 AP EAPCET 2024 · 21 May · Shift 2 MCQ

If 7 and 8 are the lengths of two sides of a triangle and 'a' is the length of its smallest side. The angles of the triangle are in AP and 'a' has two values a_1 and a_2 satisfying this condition. If $a_1 < a_2$ then $2a_1 + 3a_2 =$

(A) 15
(B) 21
(C) 24
(D) 28

Answer: (B) 21 · The council's preliminary key

Q242 AP EAPCET 2024 · 21 May · Shift 2 MCQ

In ΔABC, if $a = 13$, $b = 14$ and $\cos\frac{C}{2} = \frac{3}{\sqrt{13}}$, then $2r_1 =$

(A) $2S$
(B) Δ
(C) S
(D) 2Δ

Answer: (C) S · The council's preliminary key

Q243 AP EAPCET 2024 · 21 May · Shift 2 MCQ

In ΔABC, if $(r_2 - r_1)(r_3 - r_1) = 2r_2r_3$ then $2(r + R) =$

(A) $a + b$
(B) $c + a$
(C) $2\sqrt{2}\,\mathrm{R}\cos\left(\frac{C-A}{2}\right)$
(D) $2\sqrt{2}\,\mathrm{R}\cos\left(\frac{B-C}{2}\right)$

Answer: (D) $2\sqrt{2}\,\mathrm{R}\cos\left(\frac{B-C}{2}\right)$ · The council's preliminary key

Q244 AP EAPCET 2024 · 20 May · Shift 1 MCQ

If $\cos^4\frac{\pi}{8} + \cos^4\frac{3\pi}{8} + \cos^4\frac{5\pi}{8} + \cos^4\frac{7\pi}{8} = k$ then $\sin^{-1}\left(\frac{\sqrt{k}}{\sqrt{2}}\right) + \cos^{-1}\left(\frac{k}{3}\right) =$

(A) $\frac{2\pi}{3}$
(B) $\frac{3\pi}{4}$
(C) $\frac{\pi}{4}$
(D) $\frac{\pi}{2}$

Answer: (A) $\frac{2\pi}{3}$ · The council's preliminary key

Q245 AP EAPCET 2024 · 20 May · Shift 1 MCQ

$$\frac{\cos 10^\circ + \cos 80^\circ}{\sin 80^\circ - \sin 10^\circ} =$$

(A) $\tan 35^\circ$
(B) $\tan 55^\circ$
(C) $\tan 20^\circ$
(D) $\tan 70^\circ$

Answer: (B) $\tan 55^\circ$ · The council's preliminary key

Q246 AP EAPCET 2024 · 20 May · Shift 1 MCQ

$$\frac{\sin 1^\circ + \sin 2^\circ + \ldots + \sin 89^\circ}{2(\cos 1^\circ + \cos 2^\circ + \ldots + \cos 44^\circ) + 1} =$$

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(A) $\sqrt{2}$
(B) $\frac{1}{\sqrt{2}}$
(C) 2
(D) $\frac{1}{2}$

Answer: (B) $\frac{1}{\sqrt{2}}$ · The council's preliminary key

Q247 AP EAPCET 2024 · 20 May · Shift 1 MCQ

The number of ordered pairs (x, y) satisfying the equations $\sin x + \sin y = \sin(x + y)$ and $|x| + |y| = 1$ is

(A) 2
(B) 3
(C) 4
(D) 6

Answer: (D) 6 · The council's preliminary key

Q248 AP EAPCET 2024 · 20 May · Shift 1 MCQ

In ΔABC, if $r_1 = 4, r_2 = 8, r_3 = 24$ then $a =$

(A) 0
(B) $\frac{16}{\sqrt{5}}$
(C) $16\sqrt{5}$
(D) $\sqrt{5}$

Answer: (B) $\frac{16}{\sqrt{5}}$ · The council's preliminary key

Q249 AP EAPCET 2024 · 20 May · Shift 1 MCQ

If a circle is inscribed in an equilateral triangle of side a, then the area of any square (in sq. units) inscribed in this circle is

(A) $\frac{2a^2}{3}$
(B) $\sqrt{3}\frac{a^2}{2}$
(C) $\frac{a^2}{2\sqrt{3}}$
(D) $\frac{a^2}{6}$

Answer: (D) $\frac{a^2}{6}$ · The council's preliminary key

Q250 AP EAPCET 2024 · 20 May · Shift 1 MCQ

Match the items of List-I with those of List-II (Here Δ denotes the area of $\triangle ABC$.)

List-I	List-II

(A) $\sum \cot A$

(B) $\sum \cot \frac{A}{2}$

(C) If $\tan A : \tan B : \tan C = 1 : 2 : 3$, then $\sin A : \sin B : \sin C =$

(D) If $\cot \frac{A}{2} : \cot \frac{B}{2} : \cot \frac{C}{2} = 3 : 7 : 9$, then $a : b : c =$

(I) $(a+b+c)^2 \frac{1}{4\Delta}$

(II) $(a^2+b^2+c^2)\frac{1}{4\Delta}$

(III) $8 : 6 : 5$

(IV) $12 : 5 : 13$

(V) $\sqrt{5} : 2\sqrt{2} : 3$

(VI) 4Δ

Then the correct match is

(A) A-VI; B-I; C-II; D-III

(B) A-II; B-I; C-V; D-III

(C) A-II; B-VI; C-V; D-I

(D) A-VI; B-II; C-I; D-IV

Answer: (B) A-II; B-I; C-V; D-III · The council's preliminary key

Q251 AP EAPCET 2024 · 20 May · Shift 2 MCQ

If $\sec\theta + \tan\theta = \frac{1}{3}$, then the quadrant in which 2θ lies is

(A) 1st quadrant

(B) 2nd quadrant

(C) 3rd quadrant

(D) 4th quadrant

Answer: (C) 3rd quadrant · The council's preliminary key

Q252 AP EAPCET 2024 · 20 May · Shift 2 MCQ

If $540^\circ < A < 630^\circ$ and $|\cos A| = \frac{5}{13}$ then $\tan\frac{A}{2}\tan A =$

(A) $\frac{18}{5}$

(B) $\frac{8}{5}$

(C) $-\frac{8}{5}$

(D) $-\frac{18}{5}$

Answer: (D) $-\frac{18}{5}$ · The council's preliminary key

Q253 AP EAPCET 2024 · 20 May · Shift 2 MCQ

If $(\alpha+\beta)$ is not a multiple of $\frac{\pi}{2}$ and $3\sin(\alpha-\beta) = 5\cos(\alpha+\beta)$, then

$\tan\left(\frac{\pi}{4}+\alpha\right) + 4\tan\left(\frac{\pi}{4}+\beta\right) =$

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(A) 0
(B) 1
(C) 4
(D) 2

Answer: (A) 0 · The council's preliminary key

Q254 AP EAPCET 2024 · 20 May · Shift 2 MCQ

The general solution of the equation $\sin^2\theta + 3\cos^2\theta = 5\sin\theta$ is

(A) $n\pi \pm \frac{\pi}{3}, n \in Z$
(B) $n\pi + (-1)^n \frac{\pi}{6}, n \in Z$
(C) $n\pi \pm \frac{\pi}{6}, n \in Z$
(D) $n\pi + (-1)^n \frac{\pi}{3}, n \in Z$

Answer: (B) $n\pi + (-1)^n \frac{\pi}{6}, n \in Z$ · The council's preliminary key

Q255 AP EAPCET 2024 · 20 May · Shift 2 MCQ

In ΔABC, if $4r_1 = 5r_2 = 6r_3$, then $\sin^2\frac{A}{2} + \sin^2\frac{B}{2} + \sin^2\frac{C}{2} =$

(A) $\frac{19}{22}$
(B) $\frac{25}{33}$
(C) $\frac{74}{99}$
(D) $\frac{28}{33}$

Answer: (B) $\frac{25}{33}$ · The council's preliminary key

Q256 AP EAPCET 2024 · 20 May · Shift 2 MCQ

In $\Delta ABC, rr_1\cot\frac{A}{2} + rr_2\cot\frac{B}{2} + rr_3\cot\frac{C}{2} =$

ΔABC ಲಿ $rr_1\cot\frac{A}{2} + rr_2\cot\frac{B}{2} + rr_3\cot\frac{C}{2} =$

(A) 3Δ
(B) $3S$
(C) $\frac{S}{\Delta}$
(D) Δ

Answer: (A) 3Δ · The council's preliminary key

Q257 AP EAPCET 2024 · 20 May · Shift 2 MCQ

In $\Delta ABC, bc - r_2r_3 =$

(A) rr_1
(B) rr_2
(C) r_1
(D) ar_1

Answer: (A) rr_1 · The council's preliminary key

Q258 AP EAPCET 2024 · 19 May · Shift 2 MCQ

The smallest positive value (in degrees) of θ for which $\tan(\theta+100^\circ)=\tan(\theta+50^\circ)\tan(\theta)\tan(\theta-50^\circ)$ is valid, is

(A) 60°
(B) 45°
(C) 30°
(D) 15°

Answer: (C) 30° · The council's preliminary key

Q259 AP EAPCET 2024 · 19 May · Shift 2 MCQ

The value of $5\cos\theta+3\cos\left(\theta+\frac{\pi}{3}\right)+3$ lies between

(A) -2 and 5
(B) -1 and 8
(C) -3 and 6
(D) -4 and 10

Answer: (D) -4 and 10 · The council's preliminary key

Q260 AP EAPCET 2024 · 19 May · Shift 2 MCQ

Statement (S1): $\sin 55^\circ+\sin 53^\circ-\sin 19^\circ-\sin 17^\circ=\cos 2^\circ$

Statement (S2): Range of $\dfrac{1}{3-\cos 2x}$ is $\left[\dfrac{1}{4},\dfrac{1}{2}\right]$

Which one of the following is correct?

(A) Both (S1) and (S2) are true
(B) Both (S1) and (S2) are false
(C) (S1) is true, (S2) is false
(D) (S1) is false, (S2) is true

Answer: (D) (S1) is false, (S2) is true · The council's preliminary key

Q261 AP EAPCET 2024 · 19 May · Shift 2 MCQ

The general solution of $4\cos 2x-4\sqrt{3}\sin 2x+\cos 3x-\sqrt{3}\sin 3x+\cos x-\sqrt{3}\sin x=0$

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(A) $\frac{n\pi}{2} - \frac{\pi}{3}$
(B) $\frac{n\pi}{2} + \frac{\pi}{6}$
(C) $\frac{n\pi}{2} + \frac{\pi}{12}$
(D) $\frac{n\pi}{2} - \frac{\pi}{12}$

Answer: (C) $\frac{n\pi}{2} + \frac{\pi}{12}$ · The council's preliminary key

Q262 AP EAPCET 2024 · 19 May · Shift 2 MCQ

The general solution of $2\cos^2 x - 2\tan x + 1 = 0$ is

(A) $n\pi + \frac{\pi}{4}, n \in Z$
(B) $2n\pi \pm \frac{\pi}{4}, n \in Z$
(C) $2n\pi \pm \frac{\pi}{3}, n \in Z$
(D) $n\pi \pm \frac{\pi}{3}, n \in Z$

Answer: (A) $n\pi + \frac{\pi}{4}, n \in Z$ · The council's preliminary key

Q263 AP EAPCET 2024 · 19 May · Shift 2 MCQ

In a triangle ABC, if $r_1 = 2r_2 = 3r_3$, then $\sin A : \sin B : \sin C =$

(A) $5 : 4 : 2$
(B) $3 : 4 : 2$
(C) $6 : 3 : 2$
(D) $5 : 4 : 3$

Answer: (D) $5 : 4 : 3$ · The council's preliminary key

Q264 AP EAPCET 2024 · 19 May · Shift 2 MCQ

In ΔABC if $B = 90^\circ$ then $2(r + R) =$

(A) $a + b$
(B) $b + c$
(C) $a + c$
(D) 0

Answer: (C) $a + c$ · The council's preliminary key

Q265 AP EAPCET 2024 · 19 May · Shift 2 MCQ

In a triangle ABC, if $(a - b)(s - c) = (b - c)(s - a)$, then $r_1 + r_3 =$

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(A) $r_2 - r_3$

(B) $3r_2$

(C) $2r_2$

(D) $3(r_1 + r_2)$

Answer: (C) $2r_2$ · The council's preliminary key

Q266 AP EAPCET 2024 · 18 May · Shift 1 MCQ

$\tan 6^\circ \tan 42^\circ \tan 66^\circ \tan 78^\circ =$

(A) $\frac{3}{4}$

(B) 1

(C) 0

(D) $\frac{1}{3}$

Answer: (B) 1 · The council's preliminary key

Q267 AP EAPCET 2024 · 18 May · Shift 1 MCQ

The maximum value of $12\sin x - 5\cos x + 3$ is

(A) 18

(B) 13

(C) 16

(D) 10

Answer: (C) 16 · The council's preliminary key

Q268 AP EAPCET 2024 · 18 May · Shift 1 MCQ

$\sin^2 76^\circ + \sin^2 16^\circ - \sin 76^\circ \sin 16^\circ =$

(A) 0

(B) $\frac{1}{4}$

(C) $\frac{3}{4}$

(D) $\frac{4}{3}$

Answer: (C) $\frac{3}{4}$ · The council's preliminary key

Q269 AP EAPCET 2024 · 18 May · Shift 1 MCQ

$1 + \sin x + \sin^2 x + \sin^3 x + \cdots + \infty = 4 + 2\sqrt{3}$ and $0 < x < \pi, x \neq \frac{\pi}{2}$ then $x =$

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(A) $\frac{\pi}{6}, \frac{\pi}{4}$
(B) $\frac{\pi}{4}, \frac{5\pi}{6}$
(C) $\frac{2\pi}{5}, \frac{\pi}{6}$
(D) $\frac{\pi}{3}, \frac{2\pi}{3}$

Answer: (D) $\frac{\pi}{3}, \frac{2\pi}{3}$ · The council's preliminary key

Q270 AP EAPCET 2024 · 18 May · Shift 1 MCQ

In ΔABC, $\cos A + \cos B + \cos C =$

(A) $1 + \frac{r}{2R}$
(B) $1 - \frac{r}{R}$
(C) $1 + \frac{R}{r}$
(D) $1 + \frac{r}{R}$

Answer: (D) $1 + \frac{r}{R}$ · The council's preliminary key

Q271 AP EAPCET 2024 · 18 May · Shift 1 MCQ

In a ΔABC if $a = 26, b = 30, \cos c = \frac{63}{65}$ then c =

(A) 2
(B) 4
(C) 6
(D) 8

Answer: (D) 8 · The council's preliminary key

Q272 AP EAPCET 2024 · 18 May · Shift 1 MCQ

If H is orthocentre of ΔABC and $AH = x; BH = y; CH = z$ then $\frac{abc}{xyz} =$

(A) 1
(B) $\frac{a+b+c}{x+y+z}$
(C) $\frac{a}{x} + \frac{b}{y} + \frac{c}{z}$
(D) $\frac{ab+bc+ca}{xy+yz+zx}$

Answer: (C) $\frac{a}{x} + \frac{b}{y} + \frac{c}{z}$ · The council's preliminary key

Q273 TS EAPCET 2024 · 11 May · Shift 1 MCQ

If $(\sin\theta - \operatorname{cosec}\theta)^2 + (\cos\theta + \sec\theta)^2 = 5$ and θ lies in the third quadrant, then $(\sin\theta + \cos\theta)^3 =$

(A) $-2\sqrt{2}$
(B) $2\sqrt{2}$
(C) 4
(D) -4

Answer: (A) $-2\sqrt{2}$ · The council's preliminary key

Q274 TS EAPCET 2024 · 11 May · Shift 1 MCQ

If $0 < B < A < \frac{\pi}{4}$, $\cos^2 B - \sin^2 A = \frac{\sqrt{3}+1}{4\sqrt{2}}$ and $2\cos A \cos B = \frac{1+\sqrt{2}+\sqrt{3}}{2\sqrt{2}}$, then $\cos^2 \frac{4B}{3} - \sin^2 \frac{4A}{5} =$

(A) 1
(B) $\frac{1}{2}$
(C) 0
(D) $-\frac{1}{2}$

Answer: (B) $\frac{1}{2}$ · The council's preliminary key

Q275 TS EAPCET 2024 · 11 May · Shift 1 MCQ

If θ is an acute angle and $2\sin^2\theta = \cos^4\frac{\pi}{8} + \sin^4\frac{3\pi}{8} + \cos^4\frac{5\pi}{8} + \sin^4\frac{7\pi}{8}$, then $\theta =$

(A) $\frac{\pi}{6}$
(B) $\frac{\pi}{4}$
(C) $\frac{\pi}{3}$
(D) $\frac{\pi}{8}$

Answer: (C) $\frac{\pi}{3}$ · The council's preliminary key

Q276 TS EAPCET 2024 · 11 May · Shift 1 MCQ

If $2\tan^2\theta - 4\sec\theta + 3 = 0$, then $2\sec\theta =$

(A) 3
(B) $2+\sqrt{2}$ and $2-\sqrt{2}$
(C) $2-\sqrt{2}$
(D) $2+\sqrt{2}$

Answer: (D) $2+\sqrt{2}$ · The council's preliminary key

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Q277 TS EAPCET 2024 · 11 May · Shift 1 MCQ

In a triangle ABC, if $a = 5,\ b = 3,\ c = 7$, then $\sqrt{\frac{\sin(A - B)}{\sin(A + B)}} =$

(A) $\frac{4}{7}$
(B) 16
(C) 36
(D) $\frac{4}{5}$

Answer: (A) $\frac{4}{7}$ · The council's preliminary key

Q278 TS EAPCET 2024 · 11 May · Shift 1 MCQ

In a triangle ABC, if $r_1 = 6, r_2 = 9, r_3 = 18$, then $\cos A =$

(A) $\frac{5}{13}$
(B) $\frac{4}{5}$
(C) $\frac{5}{7}$
(D) $\frac{7}{25}$

Answer: (B) $\frac{4}{5}$ · The council's preliminary key

Q279 TS EAPCET 2024 · 10 May · Shift 1 MCQ

$\tan A = \frac{-60}{11}$ and A does not lie in the 4th quadrant. $\sec B = \frac{41}{9}$ and B does not lie in the 1st quadrant. If $\operatorname{cosec} A + \cot B = K$, then $24K =$

(A) 11
(B) 19
(C) 40
(D) 61

Answer: (B) 19 · The council's preliminary key

Q280 TS EAPCET 2024 · 10 May · Shift 1 MCQ

If $\tan A + \tan B + \cot A + \cot B = \tan A \tan B - \cot A \cot B$ and $0^\circ < A + B < 270^\circ$, then $A + B =$

(A) 45°
(B) 135°
(C) 150°
(D) 225°

Answer: (B) 135° · The council's preliminary key

Q281 TS EAPCET 2024 · 10 May · Shift 1 MCQ

If $\cos^2 84^\circ + \sin^2 126^\circ - \sin 84^\circ \cos 126^\circ = K$ and $\cot A + \tan A = 2K$, then the possible values of $\tan A$ are

(A) $\frac{2}{3}, \frac{3}{2}$
(B) $\frac{1}{3}, 3$
(C) $\frac{1}{2}, 2$
(D) $\frac{3}{4}, \frac{4}{3}$

Answer: (C) $\frac{1}{2}, 2$ · The council's preliminary key

Q282 TS EAPCET 2024 · 10 May · Shift 1 MCQ

The equation that is satisfied by the general solution of the equation $4 - 3\cos^2\theta = 5\sin\theta\cos\theta$ is

(A) $7\sin^2\theta + 3\cos^2\theta = 4$
(B) $\sin^2\theta - 2\cos\theta + \frac{1}{4} = 0$
(C) $\cot\theta - \tan\theta = \sec\theta$
(D) $1 + \sin^2\theta = 3\cos^2\theta$

Answer: (D) $1 + \sin^2\theta = 3\cos^2\theta$ · The council's preliminary key

Q283 TS EAPCET 2024 · 10 May · Shift 1 MCQ

In triangle ABC, if $a = 4$, $b = 3$, $c = 2$ then $2(a - b\cos C)(a - c\sec B) =$

(A) 0
(B) 1
(C) 2
(D) 3

Answer: (D) 3 · The council's preliminary key

Q284 TS EAPCET 2024 · 10 May · Shift 1 MCQ

In triangle ABC, if $A = 45^\circ$, $C = 75^\circ$ and $R = \sqrt{2}$, then $r =$

(A) $\dfrac{3+\sqrt{3}}{\sqrt{3}+\sqrt{2}+1}$
(B) $\dfrac{\sqrt{3}+1}{\sqrt{3}+\sqrt{2}+1}$
(C) $\dfrac{\sqrt{3}+1}{\sqrt{6}+\sqrt{3}+3}$
(D) $\dfrac{\sqrt{3}+1}{\sqrt{3}+\sqrt{2}}$

Answer: (B) $\dfrac{\sqrt{3}+1}{\sqrt{3}+\sqrt{2}+1}$ · The council's preliminary key

Q285 TS EAPCET 2024 · 10 May · Shift 2 MCQ

If $0 < \theta < \frac{\pi}{4}$ and $8\cos\theta + 15\sin\theta = 15$, then $15\cos\theta - 8\sin\theta =$

(A) 15
(B) 7
(C) 8
(D) 23

Answer: (C) 8 · The council's preliminary key

Q286 TS EAPCET 2024 · 10 May · Shift 2 MCQ

$\sin 20^\circ(4 + \sec 20^\circ) =$

(A) $\sqrt{3}$
(B) $-\sqrt{3}$
(C) 1
(D) -1

Answer: (A) $\sqrt{3}$ · The council's preliminary key

Q287 TS EAPCET 2024 · 10 May · Shift 2 MCQ

Suppose θ_1 and θ_2 are such that $(\theta_1 - \theta_2)$ lies in 3rd or 4th quadrant. If $\sin\theta_1 + \sin\theta_2 = -\frac{21}{65}$ and $\cos\theta_1 + \cos\theta_2 = -\frac{27}{65}$ then $\cos\left(\frac{\theta_1 - \theta_2}{2}\right) =$

(A) $\frac{3}{\sqrt{150}}$
(B) $\frac{3}{\sqrt{130}}$
(C) $-\frac{3}{\sqrt{130}}$
(D) $-\frac{3}{\sqrt{150}}$

Answer: (C) $-\frac{3}{\sqrt{130}}$ · The council's preliminary key

Q288 TS EAPCET 2024 · 10 May · Shift 2 MCQ

If A is the solution set of the equation $\cos^2 x = \cos^2\frac{\pi}{6}$ and B is the solution set of the equation $\cos^2 x = \log_{16} P$ where, $P + \frac{16}{P} = 10$ then, $B - A =$

(A) $\left\{x \in \mathbb{R} / x = 2n\pi \pm \frac{\pi}{4}, 2n\pi \pm \frac{\pi}{3}, n = 0, 1, 2, 3, \ldots\right\}$

(B) $\left\{x \in \mathbb{R} / x = 2n\pi \pm \frac{\pi}{3}, 2n\pi \pm \frac{2\pi}{3}, n = 0, 1, 2, 3, \ldots\right\}$

(C) $\left\{x \in \mathbb{R} / x = 2n\pi \pm \frac{\pi}{6}, 2n\pi \pm \frac{\pi}{12}, n = 0, 1, 2, 3, \ldots\right\}$

(D) $\left\{x \in \mathbb{R} / x = 2n\pi \pm \frac{\pi}{8}, 2n\pi \pm \frac{\pi}{16}, n = 0, 1, 2, 3, \ldots\right\}$

Answer: (B) $\left\{x \in \mathbb{R} / x = 2n\pi \pm \frac{\pi}{3}, 2n\pi \pm \frac{2\pi}{3}, n = 0, 1, 2, 3, \ldots\right\}$ · The council's preliminary key

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Q289 TS EAPCET 2024 · 10 May · Shift 2 MCQ

If ABC is an isosceles triangle with base BC, then $r\, r_1 =$

(A) $\mathrm{R}^2 \cos^2 \mathrm{A}$

(B) $\frac{a^2}{2}$

(C) $\frac{r}{\mathrm{R}}$

(D) $\mathrm{R}^2 \sin^2 \mathrm{A}$

Answer: (D) $\mathrm{R}^2 \sin^2 \mathrm{A}$ · The council's preliminary key

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Q290 TS EAPCET 2024 · 10 May · Shift 2 MCQ

In ΔABC, if $r_1 + r_2 = 3R$, $r_2 + r_3 = 2R$, then

(A) ABC is a right-angled isosceles triangle

(B) $\mathrm{B} = \frac{\pi}{3}$

(C) $\mathrm{A} = 90^\circ$, $a \neq b \neq c$

(D) $\mathrm{C} = 90^\circ$, $a : b : c = 2 : 1 : \sqrt{3}$

Answer: (C) $\mathrm{A} = 90^\circ$, $a \neq b \neq c$ · The council's preliminary key

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Q291 TS EAPCET 2024 · 9 May · Shift 1 MCQ

If $\tan A < 0$ and $\tan 2A = -\frac{4}{3}$, then $\cos 6A =$

(A) $\frac{117}{125}$

(B) $-\frac{117}{125}$

(C) $\frac{120}{169}$

(D) $-\frac{120}{169}$

Answer: (B) $-\frac{117}{125}$ · The council's preliminary key

Q292 TS EAPCET 2024 · 9 May · Shift 1 MCQ

If $m\cos(\alpha+\beta)-n\cos(\alpha-\beta)=m\cos(\alpha-\beta)+n\cos(\alpha+\beta)$, then $\tan\alpha\tan\beta=$

(A) $m+n$
(B) $m-n$
(C) $-\frac{n}{m}$
(D) $\frac{m}{n}$

Answer: (C) $-\frac{n}{m}$ · The council's preliminary key

Q293 TS EAPCET 2024 · 9 May · Shift 1 MCQ

The number of solutions of the equation $\sin 7\theta-\sin 3\theta=\sin 4\theta$ that lie in the interval $(0,\pi)$ is

(A) 6
(B) 3
(C) 4
(D) 5

Answer: (D) 5 · The council's preliminary key

Q294 TS EAPCET 2024 · 9 May · Shift 1 MCQ

In a triangle ABC, if $(a-b)^2\cos^2\frac{C}{2}+(a+b)^2\sin^2\frac{C}{2}=a^2+b^2$, then $\cos A=$

(A) $\cos B$
(B) $\sin C$
(C) $\sin B$
(D) $\cos C$

Answer: (C) $\sin B$ · The council's preliminary key

Q295 TS EAPCET 2024 · 9 May · Shift 1 MCQ

In a triangle ABC, if $r_1r_2+rr_3=35$, $r_2r_3+rr_1=63$ and $r_3r_1+rr_2=45$, then $2s=$

(A) 28
(B) 25
(C) 21
(D) 36

Answer: (C) 21 · The council's preliminary key

Q296 TS EAPCET 2024 · 9 May · Shift 2 MCQ

The maximum value of the function $f(x)=3\sin^{12}x+4\cos^{16}x$ is

(A) 4
(B) 5
(C) 6
(D) 7

Answer: (A) 4 · The council's preliminary key

Q297 TS EAPCET 2024 · 9 May · Shift 2 MCQ

If $A+B+C=2S$, then $\sin(S-A)\cos(S-B)-\sin(S-C)\cos S=$

(A) $\cos A\sin B\sin C$
(B) $\sin A\cos B\cos C$
(C) $\cos A\sin B$
(D) $\sin A\cos B$

Answer: (C) $\cos A\sin B$ · The council's preliminary key

Q298 TS EAPCET 2024 · 9 May · Shift 2 MCQ

If $\cos x+\cos y=\frac{2}{3}$ and $\sin x-\sin y=\frac{3}{4}$, then $\sin(x-y)+\cos(x-y)=$

(A) $\frac{161}{145}$
(B) $\frac{127}{145}$
(C) $\frac{1}{2}$
(D) $\frac{8}{9}$

Answer: (B) $\frac{127}{145}$ · The council's preliminary key

Q299 TS EAPCET 2024 · 9 May · Shift 2 MCQ

The solution set of the equation $\cos^2 2x+\sin^2 3x=1$ is

(A) $\left\{x/x=n\pi+\frac{\pi}{2},n\in z\right\}$
(B) $\left\{x/x=2n\pi\pm\frac{\pi}{4},n\in z\right\}$
(C) $\left\{x/x=\frac{n\pi}{5},n\in z\right\}$
(D) $\left\{x/x=n\pi+(-1)^n\frac{\pi}{6},n\in z\right\}$

Answer: (C) $\left\{x/x=\frac{n\pi}{5},n\in z\right\}$ · The council's preliminary key

Q300 TS EAPCET 2024 · 9 May · Shift 2 MCQ

In a triangle ABC, if $\tan\frac{A}{2}:\tan\frac{B}{2}:\tan\frac{C}{2}=15:10:6$, then $\frac{a}{b-c}=$

(A) $\frac{8}{3}$
(B) $\frac{7}{3}$
(C) 5
(D) 4

Answer: (D) 4 · The council's preliminary key

Q301 TS EAPCET 2024 · 9 May · Shift 2 MCQ

In a triangle ABC, $\frac{a(rr_1 + r_2r_3)}{r_1 - r + r_2 + r_3} =$

(A) $\sqrt{rr_1r_2r_3}$
(B) $r_1r_2 + r_2r_3 + r_3r_1$
(C) $2(\mathrm{R} + r)$
(D) $2 + \frac{r}{2\mathrm{R}}$

Answer: (A) $\sqrt{rr_1r_2r_3}$ · The council's preliminary key

Q302 AP EAPCET 2023 · 19 May · Shift 1 MCQ

If $P = \tan 15^\circ + \cot 15^\circ$, $Q = \tan 22\frac{1^\circ}{2} + \cot 22\frac{1^\circ}{2}$ and $R = \sin 54^\circ + \sin 18^\circ$, then their ascending order is

(A) P, Q, R
(B) P, R, Q
(C) R, Q, P
(D) R, P, Q

Answer: (C) R, Q, P · The council's preliminary key

Q303 AP EAPCET 2023 · 19 May · Shift 1 MCQ

$\cos\frac{\pi}{2^2} . \cos\frac{\pi}{2^3} . \cos\frac{\pi}{2^4} \ldots \cos\frac{\pi}{2^{10}} =$

(A) $\frac{\sin\left(\frac{\pi}{2^{10}}\right)}{512}$
(B) $\frac{\mathrm{cosec}\left(\frac{\pi}{2^{10}}\right)}{512}$
(C) $\frac{\sin\left(\frac{\pi}{2^{10}}\right)}{1024}$
(D) $\frac{\mathrm{cosec}\left(\frac{\pi}{2^{10}}\right)}{1024}$

Answer: (B) $\frac{\mathrm{cosec}\left(\frac{\pi}{2^{10}}\right)}{512}$ · The council's preliminary key

Q304 AP EAPCET 2023 · 19 May · Shift 1 MCQ

If $\sin(\alpha+\beta)=5\sin(\alpha-\beta)$, then $\dfrac{\sin 2\beta}{5-\cos 2\beta}=$

(A) $\tan(\alpha+\beta)$
(B) $\cot(\alpha+\beta)$
(C) $\cot(\alpha-\beta)$
(D) $\tan(\alpha-\beta)$

Answer: (D) $\tan(\alpha-\beta)$ · The council's preliminary key

Q305 AP EAPCET 2023 · 19 May · Shift 1 MCQ

Match the items of List – A with those of the entries of List – B

List – A	List – B
(I) $\sin^2 5^\circ+\sin^2 10^\circ+\sin^2 15^\circ+\ldots+\sin^2 90^\circ=$	(A) 0
(II) $\tan^2 5^\circ\cdot\tan^2 10^\circ\cdot\tan^2 15^\circ\ldots\tan^2 85^\circ=$	(B) $\frac{19}{2}$
(III) $\cos^2 5^\circ+\cos^2 10^\circ+\cos^2 15^\circ+\ldots+\cos^2 180^\circ=$	(C) 18
(IV) $\cot 5^\circ+\cot 10^\circ+\cot 15^\circ+\ldots+\cot 175^\circ=$	(D) 1
	(E) -1

(A) (I)→(B), (II)→(D), (III)→(C), (IV)→(A)
(B) (I)→(B), (II)→(E), (III)→(A), (IV)→(C)
(C) (I)→(B), (II)→(C), (III)→(A), (IV)→(D)
(D) (I)→(C), (II)→(B), (III)→(D), (IV)→(E)

Answer: (A) (I)→(B), (II)→(D), (III)→(C), (IV)→(A) · The council's preliminary key

Q306 AP EAPCET 2023 · 19 May · Shift 1 MCQ

If $\cos A+\cos B+\cos C=0=\sin A+\sin B+\sin C$, then $\cos(A-B)=$

(A) 0
(B) $\frac{1}{2}$
(C) $-\frac{2}{3}$
(D) $-\frac{1}{2}$

Answer: (D) $-\frac{1}{2}$ · The council's preliminary key

Q307 AP EAPCET 2023 · 19 May · Shift 1 MCQ

In ΔABC, if $r=1$, $R=4$ and $\Delta=8$, then $\frac{1}{ab}+\frac{1}{bc}+\frac{1}{ca}=$

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(A) 8
(B) $\frac{1}{4}$
(C) $\frac{1}{8}$
(D) $\frac{1}{16}$

Answer: (C) $\frac{1}{8}$ · The council's preliminary key

Q308 AP EAPCET 2023 · 19 May · Shift 1 MCQ

In ΔABC, if r is the inradius and r1,r2,r3 are the ex-radii, then

$\frac{1}{4}\left[b^2 \sin 2C + c^2 \sin 2B\right] =$

(A) $rr_1 \tan \frac{A}{2}$
(B) $bc \cos A$
(C) $rr_1r_2r_3$
(D) $rr_1 \cot \frac{A}{2}$

Answer: (D) $rr_1 \cot \frac{A}{2}$ · The council's preliminary key

Q309 AP EAPCET 2023 · 19 May · Shift 1 MCQ

In ΔABC, $\frac{a}{s-a} + \frac{b}{s-b} + \frac{c}{s-c} =$

(A) $\frac{4R}{r} - 1$
(B) $\frac{R}{r} - 3$
(C) $\frac{2R}{r} - 1$
(D) $\frac{4R}{r} - 2$

Answer: (D) $\frac{4R}{r} - 2$ · The council's preliminary key

Q310 AP EAPCET 2023 · 18 May · Shift 1 MCQ

$$\sum_{k=0}^{4} \sin^2\left((2k+1)\frac{\pi}{20}\right) =$$

(A) 5
(B) $\frac{5}{2}$
(C) 3
(D) $\frac{3}{2}$

Answer: (B) $\frac{5}{2}$ · The council's preliminary key

Q311 AP EAPCET 2023 · 18 May · Shift 1 MCQ

If $\tan B = \frac{2 \sin A \sin C}{\sin(A+C)}$, then $\tan A$, $\tan B$ and $\tan C$ are in

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(A) Arithmetic progression
(B) Harmonic progression
(C) Geometric progression
(D) Arithmetico – geometric progression

Answer: (B) Harmonic progression · The council's preliminary key

Q312 AP EAPCET 2023 · 18 May · Shift 1 MCQ

If two acute angles A and B are such that $A \neq B$ and $\frac{x}{y} = \frac{\cos A}{\cos B}$, then $\frac{x \tan A - y \tan B}{x+y} =$

(A) $\tan\left(\frac{A-B}{2}\right)$
(B) $\tan\left(\frac{B-A}{2}\right)$
(C) $\tan\left(\frac{A+B}{2}\right)$
(D) $\cot\left(\frac{A+B}{2}\right)$

Answer: (A) $\tan\left(\frac{A-B}{2}\right)$ · The council's preliminary key

Q313 AP EAPCET 2023 · 18 May · Shift 1 MCQ

$$\frac{1+\cos\theta-\sin\theta}{1+\cos\theta+\sin\theta}+\frac{1+\cos\theta+\sin\theta}{1+\cos\theta-\sin\theta}=$$

(A) $2\sec\theta$
(B) $2\,\mathrm{cosec}\,\theta$
(C) $2\tan\theta$
(D) $2\cot\theta$

Answer: (A) $2\sec\theta$ · The council's preliminary key

Q314 AP EAPCET 2023 · 18 May · Shift 1 MCQ

If $m\tan(\theta-30^\circ)=n\tan(\theta+120^\circ)$, then $\frac{m+n}{m-n}=$

(A) $2\cos 2\theta$
(B) $2\cos^2\theta$
(C) $\tan 2\theta$
(D) $2\sin 2\theta$

Answer: (A) $2\cos 2\theta$ · The council's preliminary key

Q315 AP EAPCET 2023 · 18 May · Shift 1 MCQ

In ΔABC, if $a\sin^2\frac{C}{2}+c\sin^2\frac{A}{2}=\frac{b}{2}$, then $a+c:b=$

(A) $2:1$
(B) $1:2$
(C) $3:2$
(D) $4:3$

Answer: (A) $2:1$ · The council's preliminary key

Q316 AP EAPCET 2023 · 18 May · Shift 1 MCQ

In ΔABC, $r_1 + r_2 + r_3 - r =$

(A) $4R$
(B) $2R$
(C) $4R\sin A$
(D) $4R\cos A$

Answer: (A) $4R$ · The council's preliminary key

Q317 AP EAPCET 2023 · 18 May · Shift 1 MCQ

In ΔABC, if $s-a : s-b : s-c = 2:3:4$, then $\cot A : \cot C =$

(A) $6:7$
(B) $19:30$
(C) $6:19$
(D) $1:5$

Answer: (D) $1:5$ · The council's preliminary key

Q318 AP EAPCET 2023 · 18 May · Shift 2 MCQ

If $\cos\alpha + \cos\beta = \frac{1}{3}$ and $\sin\alpha + \sin\beta = \frac{1}{4}$, then $\cos(\alpha+\beta) =$

(A) $\frac{24}{25}$
(B) $\frac{7}{25}$
(C) $\frac{13}{25}$
(D) $\frac{12}{13}$

Answer: (B) $\frac{7}{25}$ · The council's preliminary key

Q319 AP EAPCET 2023 · 18 May · Shift 2 MCQ

$$\left(1+\cos\frac{\pi}{8}\right)\left(1+\cos\frac{2\pi}{8}\right)\left(1+\cos\frac{3\pi}{8}\right)\left(1+\cos\frac{4\pi}{8}\right)\ldots\left(1+\cos\frac{7\pi}{8}\right) =$$

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(A) $\frac{1}{16}$
(B) $\frac{1}{64}$
(C) $\frac{3}{16}$
(D) $\frac{3}{64}$

Answer: (A) $\frac{1}{16}$ · The council's preliminary key

Q320 AP EAPCET 2023 · 18 May · Shift 2 MCQ

If $3\sin^4 x + 2\cos^4 x = \frac{6}{5}$ and x is an acute angle, then $\tan 2x =$

(A) $\frac{2\sqrt{6}}{5}$
(B) $2\sqrt{6}$
(C) $\frac{3\sqrt{2}}{5}$
(D) $\frac{2\sqrt{3}}{5}$

Answer: (B) $2\sqrt{6}$ · The council's preliminary key

Q321 AP EAPCET 2023 · 18 May · Shift 2 MCQ

If $f_n(x) = \frac{1}{2n}\left[\sin^{2n} x + \cos^{2n} x\right]$, then $f_1(x) + f_2(x) - f_3(x) =$

(A) 0
(B) $\frac{5}{12}$
(C) $\frac{11}{12}$
(D) $\frac{7}{12}$

Answer: (D) $\frac{7}{12}$ · The council's preliminary key

Q322 AP EAPCET 2023 · 18 May · Shift 2 MCQ

If $\cos\theta$, $\sin\theta$ and $\cot\theta$ are in geometric progression, then $\sin^9\theta + \sin^6\theta + 3\sin^5\theta + \sin^3\theta + \sin^2\theta =$

(A) 2
(B) 7
(C) 1
(D) 5

Answer: (A) 2 · The council's preliminary key

Q323 AP EAPCET 2023 · 18 May · Shift 2 MCQ

In ΔABC, if $r_1 : r_2 = 7 : 8$ and $r_1 : r_3 = 3 : 4$, then $a : b : c =$

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(A) $24 : 21 : 28$

(B) $8 : 7 : 6$

(C) $13 : 14 : 15$

(D) $7 : 8 : 6$

Answer: (C) $13 : 14 : 15$ · The council's preliminary key

Q324 AP EAPCET 2023 · 18 May · Shift 2 MCQ

In ΔABC, if $(\sin A + \sin B)(\sin A - \sin B) = \sin C(\sin B + \sin C)$, then $\angle A =$

(A) 60°

(B) 30°

(C) 150°

(D) 120°

Answer: (D) 120° · The council's preliminary key

Q325 AP EAPCET 2023 · 18 May · Shift 2 MCQ

In ΔABC, if A, B, C are in arithmetic progression, then $\frac{c}{a}\sin 2A + \frac{a}{c}\sin 2C =$

(A) $\frac{\sqrt{3}}{2}$

(B) $\sqrt{3}$

(C) 1

(D) $\frac{1}{2}$

Answer: (B) $\sqrt{3}$ · The council's preliminary key

Q326 AP EAPCET 2023 · 17 May · Shift 1 MCQ

$$\frac{\tan A}{1 - \cot A} + \frac{\cot A}{1 - \tan A} =$$

(A) $\sec A \operatorname{cosec} A - 1$

(B) $\tan A + \cot A$

(C) $\tan A + \cot A + 1$

(D) $\sec A + \operatorname{cosec} A + 1$

Answer: (C) $\tan A + \cot A + 1$ · The council's preliminary key

Q327 AP EAPCET 2023 · 17 May · Shift 1 MCQ

Match the ranges of the functions given in List – A with those of the items given in List – B

List – A	List – B
(I) $3\sin^2 x + 4\cos^2 x - 2$	(a) $\left[\frac{1}{4}, 1\right]$
(II) $\cos^2 x + \sin^4 x$	(b) $\left[-\frac{1}{4}, \frac{1}{4}\right]$

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(III) $\sin^6 x + \cos^6 x$ (c) $[1, 2]$

(IV) $\cos x \cos\left(\frac{2\pi}{3} + x\right) \cos\left(\frac{2\pi}{3} - x\right)$ (d) $\left[\frac{3}{4}, 1\right]$

(e) $[0, 1]$

(A) (I) → (c) (II) → (a) (III) → (d) (IV) → (b)

(B) (I) → (c) (II) → (d) (III) → (a) (IV) → (b)

(C) (I) → (b) (II) → (d) (III) → (a) (IV) → (e)

(D) (I) → (b) (II) → (e) (III) → (d) (IV) → (c)

Answer: (B) (I) → (c) (II) → (d) (III) → (a) (IV) → (b) · The council's preliminary key

Q328 AP EAPCET 2023 · 17 May · Shift 1 MCQ

In ΔABC, $\frac{\sin 2A + \sin 2B + \sin 2C}{\cos A + \cos B + \cos C - 1} =$

(A) $2[\sin A + \sin B + \sin C]$

(B) $\sin A + \sin B + \sin C$

(C) $4[\sin A + \sin B + \sin C]$

(D) $8[\sin A + \sin B + \sin C]$

Answer: (A) $2[\sin A + \sin B + \sin C]$ · The council's preliminary key

Q329 AP EAPCET 2023 · 17 May · Shift 1 MCQ

$\cos 12^\circ . \cos 24^\circ . \cos 36^\circ . \cos 48^\circ . \cos 72^\circ . \cos 84^\circ =$

(A) $\frac{1}{32}$

(B) $\frac{1}{16}$

(C) $\frac{1}{64}$

(D) $\frac{1}{128}$

Answer: (C) $\frac{1}{64}$ · The council's preliminary key

Q330 AP EAPCET 2023 · 17 May · Shift 1 MCQ

If α, β are acute angles such that $\sin\beta = 2\sin\alpha$ and $3\cos\beta = 2\cos\alpha$, then $\sec(\alpha + \beta) =$

(A) 4

(B) $\sqrt{15}$

(C) $\sqrt{20}$

(D) 5

Answer: (A) 4 · The council's preliminary key

Q331 AP EAPCET 2023 · 17 May · Shift 1 MCQ

In ΔABC, $\left(\tan\frac{A}{2} + \tan\frac{B}{2}\right)\tan\frac{C}{2} =$

(A) $\frac{2c}{a+b+c}$
(B) $\frac{2c}{a+b-c}$
(C) $\frac{2c^2}{a^2+b^2+c^2}$
(D) $\frac{c}{a+b+c}$

Answer: (A) $\frac{2c}{a+b+c}$ · The council's preliminary key

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Q332 AP EAPCET 2023 · 17 May · Shift 1 MCQ

In ΔABC, if $\angle C = 90^\circ$, then $\left(\frac{r_1-r_3}{r_1}\right)\left(\frac{r_2-r_3}{r_2}\right) =$

(A) 1
(B) 3
(C) 4
(D) 2

Answer: (D) 2 · The council's preliminary key

Q333 AP EAPCET 2023 · 17 May · Shift 1 MCQ

In ΔABC, A, B and C are in arithmetic progression and $a : c = 1 : 2$. If $b = 4\sqrt{3}$ cm, then the area of ΔABC (in Sq. cm) is

(A) $16\sqrt{3}$
(B) $12\sqrt{3}$
(C) $8\sqrt{3}$
(D) $6\sqrt{3}$

Answer: (C) $8\sqrt{3}$ · The council's preliminary key

Q334 AP EAPCET 2023 · 17 May · Shift 2 MCQ

If $10\sin^4\alpha + 15\cos^4\alpha = 6$, then $16\tan^6\alpha + 27\cot^6\alpha =$

(A) 43
(B) 54
(C) 62
(D) 59

Answer: (C) 62 · The council's preliminary key

Q335 AP EAPCET 2023 · 17 May · Shift 2 MCQ

If $\sin\theta = \frac{3}{5}$ and θ is not in the first quadrant, then $15\sin 2\theta - 20\cos 2\theta - 7\tan 2\theta =$

(A) -4
(B) -12
(C) 12
(D) 4

Answer: (D) 4 · The council's preliminary key

Q336 AP EAPCET 2023 · 17 May · Shift 2 MCQ

$[1+\sec 2\theta][1+\sec 4\theta] =$

(A) $\tan\theta\tan 4\theta$
(B) $4\cot\theta\tan 4\theta$
(C) $\cot\theta\tan 4\theta$
(D) $4\tan\theta\tan 4\theta$

Answer: (C) $\cot\theta\tan 4\theta$ · The council's preliminary key

Q337 AP EAPCET 2023 · 17 May · Shift 2 MCQ

$\cot 16^\circ\cot 44^\circ + \cot 44^\circ\cot 76^\circ - \cot 76^\circ\cot 16^\circ =$

(A) 1
(B) -1
(C) -3
(D) 3

Answer: (D) 3 · The council's preliminary key

Q338 AP EAPCET 2023 · 17 May · Shift 2 MCQ

In ΔABC, if $\cos^2 A + \cos^2 B + \cos^2 C = 1$, then ΔABC is

(A) an equilateral Triangle
(B) an isosceles triangle
(C) a right angled triangle
(D) a scalene triangle

Answer: (C) a right angled triangle · The council's preliminary key

Q339 AP EAPCET 2023 · 17 May · Shift 2 MCQ

In ΔABC, if a, b, c are 5, 12 and 13 respectively, then $b^2\sin 2C + c^2\sin 2B =$

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(A) 60
(B) 120
(C) 180
(D) 90

Answer: (B) 120 · The council's preliminary key

Q340 AP EAPCET 2023 · 17 May · Shift 2 MCQ

In ΔABC, $\frac{r_1-r}{a}+\frac{r_2-r}{b}=$

(A) $\frac{a}{r_3}$
(B) $\frac{b}{r_3}$
(C) $\frac{c}{r_3}$
(D) 1

Answer: (C) $\frac{c}{r_3}$ · The council's preliminary key

Q341 AP EAPCET 2023 · 17 May · Shift 2 MCQ

In ΔABC, if $(a-b)(s-c)=(b-c)(s-a)$, then r_1, r_2, r_3 are in

(A) Arithmetic progression
(B) Geometric progression
(C) Harmonic progression
(D) Arithmetico – geometric progression

Answer: (A) Arithmetic progression · The council's preliminary key

Q342 AP EAPCET 2023 · 16 May · Shift 1 MCQ

$\sin^4\frac{\pi}{8}+\sin^4\frac{3\pi}{8}+\sin^4\frac{5\pi}{8}+\sin^4\frac{7\pi}{8}=$

(A) $\frac{1}{4}$
(B) $\frac{3}{8}$
(C) $\frac{3}{2}$
(D) $\frac{3}{4}$

Answer: (C) $\frac{3}{2}$ · The council's preliminary key

Q343 AP EAPCET 2023 · 16 May · Shift 1 MCQ

In ΔABC, if $\cos A\cdot\cos B\cdot\cos C=\frac{1}{5}$, then $\tan A\tan B+\tan B\tan C+\tan C\tan A=$

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(A) 4
(B) $\frac{11}{5}$
(C) 6
(D) $\frac{6}{5}$

Answer: (C) 6 · The council's preliminary key

Q344 AP EAPCET 2023 · 16 May · Shift 1 MCQ

If $\cos A + \cos(A+B) + \cos(A+2B) + \ldots$ upto n terms $= \cos\left(\frac{2A+(n-1)B}{2}\right)\sin\frac{nB}{2}\operatorname{cosec}\frac{B}{2}$, then $\cos\frac{\pi}{19} + \cos\frac{3\pi}{19} + \cos\frac{5\pi}{19} + \cdots + \cos\frac{17\pi}{19} =$

(A) 1
(B) $-\frac{1}{2}$
(C) $\frac{1}{2}$
(D) 0

Answer: (C) $\frac{1}{2}$ · The council's preliminary key

Q345 AP EAPCET 2023 · 16 May · Shift 1 MCQ

If two angles α, β are such that $0 < \alpha, \beta < \frac{\pi}{4}$, $\sqrt{1+\cos 2\alpha} = \frac{3}{\sqrt{5}}$ and $\frac{\sqrt{1-\cos 2\beta}}{\sqrt{1+\cos 2\beta}} = \frac{1}{7}$, then $(2\alpha+\beta) =$

(A) $\frac{\pi}{3}$
(B) $\frac{\pi}{6}$
(C) $\frac{3\pi}{4}$
(D) $\frac{\pi}{4}$

Answer: (D) $\frac{\pi}{4}$ · The council's preliminary key

Q346 AP EAPCET 2023 · 16 May · Shift 1 MCQ

In ΔABC, if $r_1 = 2r_2 = 3r_3$, then

(A) $b + c = 2a$
(B) $a + b = 2c$
(C) $a + c = 2b$
(D) $\Delta = abc$

Answer: (C) $a + c = 2b$ · The council's preliminary key

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Q347 AP EAPCET 2023 · 16 May · Shift 1 MCQ

In ΔABC, if $\tan\frac{A}{2}+\tan\frac{C}{2}=\frac{b}{s}$, then $\sin\left(\frac{A+C}{3}\right)=$

(A) 1
(B) $\frac{\sqrt{3}}{2}$
(C) $\frac{1}{\sqrt{2}}$
(D) $\frac{1}{2}$

Answer: (D) $\frac{1}{2}$ · The council's preliminary key

Q348 AP EAPCET 2023 · 16 May · Shift 1 MCQ

In ΔABC, $\angle B=60^\circ$ and $\angle A=75^\circ$. If a point D divides BC in the ratio $2:3$, then $\sin\angle BAD:\sin\angle CAD=$

(A) $\sqrt{2}:\sqrt{3}$
(B) $\sqrt{3}:2$
(C) $\sqrt{3}:\sqrt{2}$
(D) $3:\sqrt{2}$

Answer: (A) $\sqrt{2}:\sqrt{3}$ · The council's preliminary key

Q349 AP EAPCET 2023 · 16 May · Shift 2 MCQ

$$\frac{\cot A}{1-\tan A}+\frac{\tan A}{1-\cot A}=$$

(A) $\tan A+\cot A$
(B) $\sec A+\operatorname{cosec} A$
(C) $\sin A\cos A+1$
(D) $\sec A\operatorname{cosec} A+1$

Answer: (D) $\sec A\operatorname{cosec} A+1$ · The council's preliminary key

Q350 AP EAPCET 2023 · 16 May · Shift 2 MCQ

If $\theta=\frac{\pi}{9}$, then $1+27\tan^2\theta-33\tan^4\theta+\tan^6\theta=$

(A) 3
(B) 4
(C) -3
(D) -11

Answer: (B) 4 · The council's preliminary key

Q351 AP EAPCET 2023 · 16 May · Shift 2 MCQ

$\cot 18^\circ\cdot\cot 36^\circ+1=$

(A) $\sqrt{5+2\sqrt{5}}$
(B) $\sqrt{5-2\sqrt{5}}$
(C) $3-\sqrt{5}$
(D) $3+\sqrt{5}$

Answer: (D) $3+\sqrt{5}$ · The council's preliminary key

Q352 AP EAPCET 2023 · 16 May · Shift 2 MCQ

If $\cos^3 x \sin 4x = \sum_{r=0}^{n} a_r \sin rx \ \ \forall x \in \mathbb{R}$, then $a_3 + a_5 : a_1 + a_7 =$

(A) $1:3$
(B) $1:1$
(C) $2:1$
(D) $3:1$

Answer: (D) $3:1$ · The council's preliminary key

Q353 AP EAPCET 2023 · 16 May · Shift 2 MCQ

In ΔABC, $(\cot A + \cot B)(\cot B + \cot C)(\cot C + \cot A) =$

(A) $\sec A \sec B \sec C$
(B) $\tan A \tan B \tan C$
(C) $\operatorname{cosec} A \operatorname{cosec} B \operatorname{cosec} C$
(D) $\cot A \cot B \cot C$

Answer: (C) $\operatorname{cosec} A \operatorname{cosec} B \operatorname{cosec} C$ · The council's preliminary key

Q354 AP EAPCET 2023 · 16 May · Shift 2 MCQ

In ΔABC, if $\cos A + \cos C = 4\sin^2 \frac{B}{2}$, then the ratio between the perimeter of the triangle and $(a + c)$ is

(A) $2:1$
(B) $3:2$
(C) $5:3$
(D) $4:1$

Answer: (B) $3:2$ · The council's preliminary key

Q355 AP EAPCET 2023 · 16 May · Shift 2 MCQ

In ΔABC, if $\angle A = 90^\circ$, then $(r_2 - r_1)(r_3 - r_1) =$

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(A) r_2r_3
(B) $2r_2r_3$
(C) $4r_2r_3$
(D) 2

Answer: (B) $2r_2r_3$ · The council's preliminary key

Q356 AP EAPCET 2023 · 16 May · Shift 2 MCQ

In ΔABC, if a, b, c are in arithmetic progression and $C = 2A$, then $a : c =$

(A) $4 : 5$
(B) $2 : 3$
(C) $5 : 6$
(D) $\sqrt{3} : 2$

Answer: (B) $2 : 3$ · The council's preliminary key

Q357 AP EAPCET 2023 · 15 May · Shift 1 MCQ

$\sin 21^\circ \cos 9^\circ - \cos 84^\circ \cos 6^\circ =$

(A) 1
(B) $\frac{1}{4}$
(C) $\frac{1}{2}$
(D) $\frac{3}{2}$

Answer: (B) $\frac{1}{4}$ · The council's preliminary key

Q358 AP EAPCET 2023 · 15 May · Shift 1 MCQ

If $1 + \sqrt{1+a} = \left(1 + \sqrt{1-a}\right)\cot\alpha$ and $0 < a < 1$, then $\sin 4\alpha =$

(A) a
(B) $2a$
(C) $3a$
(D) $4a$

Answer: (A) a · The council's preliminary key

Q359 AP EAPCET 2023 · 15 May · Shift 1 MCQ

If $A = \frac{\pi}{24}$, then $\frac{\cos A + \cos 3A + \cos 5A + \cos 7A}{\sin A + \sin 3A + \sin 5A + \sin 7A} =$

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(A) $\sqrt{3}$
(B) $2\sqrt{3}$
(C) $\frac{1}{\sqrt{3}}$
(D) $\frac{2}{\sqrt{3}}$

Answer: (A) $\sqrt{3}$ · The council's preliminary key

Q360 AP EAPCET 2023 · 15 May · Shift 1 MCQ

If $\sec(\theta+\alpha), \sec\theta$ and $\sec(\theta-\alpha)$ are in arithmetic progression, then $\sin^2\theta =$

(A) $\cos\alpha$
(B) $2\cos\alpha$
(C) $-2\cos\alpha$
(D) $-\cos\alpha$

Answer: (D) $-\cos\alpha$ · The council's preliminary key

Q361 AP EAPCET 2023 · 15 May · Shift 1 MCQ

If $\cos\alpha+\cos\beta=a$ and $\sin\alpha+\sin\beta=b$, then match the items given in List - A with those of their values in List - B

List - A	List - B
(I) $\tan\left(\frac{\alpha+\beta}{2}\right)=$	(a) $\frac{b}{a}$
(II) $\cos(\alpha+\beta)=$	(b) $\frac{2ab}{a^2+b^2}$
(III) $\sin(\alpha+\beta)=$	(c) $\frac{2ab}{a^2-b^2}$
(IV) $\tan(\alpha+\beta)=$	(d) $\frac{a^2-b^2}{a^2+b^2}$
	(e) $\frac{a^2+b^2}{a^2-b^2}$

(A) (I) $\rightarrow$ (a) (II) $\rightarrow$ (e) (III) $\rightarrow$ (d) (IV) $\rightarrow$ (c)
(B) (I) $\rightarrow$ (a) (II) $\rightarrow$ (c) (III) $\rightarrow$ (b) (IV) $\rightarrow$ (e)
(C) (I) $\rightarrow$ (a) (II) $\rightarrow$ (d) (III) $\rightarrow$ (c) (IV) $\rightarrow$ (b)
(D) (I) $\rightarrow$ (a) (II) $\rightarrow$ (d) (III) $\rightarrow$ (b) (IV) $\rightarrow$ (c)

Answer: (D) (I) $\rightarrow$ (a) (II) $\rightarrow$ (d) (III) $\rightarrow$ (b) (IV) $\rightarrow$ (c) · The council's preliminary key

Q362 AP EAPCET 2023 · 15 May · Shift 1 MCQ

In Δ ABC, if $\cot\frac{A}{2}:\cot\frac{B}{2}:\cot\frac{C}{2}=3:7:9$, then $a:b:c=$

(A) $8 : 6 : 5$
(B) $5 : 6 : 8$
(C) $10 : 8 : 5$
(D) $5 : 8 : 10$

Answer: (A) $8 : 6 : 5$ · The council's preliminary key

Q363 AP EAPCET 2023 · 15 May · Shift 1 MCQ

In ΔABC, if $\frac{1}{r_1}, \frac{1}{r_2}$ and $\frac{1}{r_3}$ are in arithmetic progression, then $r_2 : r =$

(A) $3 : 2$
(B) $2 : 1$
(C) $1 : 3$
(D) $3 : 1$

Answer: (D) $3 : 1$ · The council's preliminary key

Q364 AP EAPCET 2023 · 15 May · Shift 1 MCQ

If P_1, P_2 and P_3 are the lengths of the altitudes drawn from the vertices A, B and C of ΔABC respectively, then $\frac{\cos A}{P_1} + \frac{\cos B}{P_2} + \frac{\cos C}{P_3} =$

(A) $\frac{1}{R}$
(B) R
(C) $\frac{\Delta}{R}$
(D) $\frac{r}{R}$

Answer: (A) $\frac{1}{R}$ · The council's preliminary key

Q365 AP EAPCET 2023 · 15 May · Shift 2 MCQ

If $\cot x \cot y = a$ and $x + y = \frac{\pi}{6}$, then the quadratic equation satisfying $\cot x$ and $\cot y$ is

(A) $t^2 + (1-a)\sqrt{3}t + a = 0$
(B) $\sqrt{3}t^2 + (1-a)t + a\sqrt{3} = 0$
(C) $\sqrt{3}t^2 + (a-1)t + a\sqrt{3} = 0$
(D) $t^2 + (a-1)\sqrt{3}t + a = 0$

Answer: (B) $\sqrt{3}t^2 + (1-a)t + a\sqrt{3} = 0$ · The council's preliminary key

Q366 AP EAPCET 2023 · 15 May · Shift 2 MCQ

If $\tan A + \tan B = x$ and $\cot A + \cot B = y$, then $\tan(A + B) =$

(A) $\frac{xy}{x-y}$
(B) $\frac{xy}{y-x}$
(C) $\frac{xy}{x+y}$
(D) $\frac{x-y}{xy}$

Answer: (B) $\frac{xy}{y-x}$ · The council's preliminary key

Q367 AP EAPCET 2023 · 15 May · Shift 2 MCQ

$\frac{1}{\cos 290^\circ} + \frac{1}{\sqrt{3}\sin 250^\circ} =$

(A) $\frac{\sqrt{3}}{4}$
(B) $\frac{4}{\sqrt{3}}$
(C) $\frac{2}{\sqrt{3}}$
(D) $\frac{\sqrt{3}}{2}$

Answer: (B) $\frac{4}{\sqrt{3}}$ · The council's preliminary key

Q368 AP EAPCET 2023 · 15 May · Shift 2 MCQ

If $\left[1-\cos\left(\frac{\pi}{2}+\alpha\right)+\sin\left(\frac{3\pi}{2}+\alpha\right)\right]^2+\left[1-\sin\left(\frac{3\pi}{2}-\alpha\right)-\cos\left(\frac{3\pi}{2}+\alpha\right)\right]^2 = a+b\sin^2\left(\frac{\pi}{4}+\alpha\right)$, then $a^2+b^2 =$

(A) 20
(B) 52
(C) 40
(D) 32

Answer: (B) 52 · The council's preliminary key

Q369 AP EAPCET 2023 · 15 May · Shift 2 MCQ

The range of $\frac{1}{\sin^2 x + 3\sin x\cos x + 5\cos^2 x}$ is

(A) $\left[2, \frac{11}{2}\right]$
(B) $\left[\frac{1}{2}, \frac{11}{2}\right]$
(C) $\left[\frac{2}{11}, \frac{1}{2}\right]$
(D) $\left[\frac{2}{11}, 2\right]$

Answer: (D) $\left[\frac{2}{11}, 2\right]$ · The council's preliminary key

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Q370 AP EAPCET 2023 · 15 May · Shift 2 MCQ

In ΔABC, if $\sin^2 B = \sin C$ and $3\cos^2 B = 2\cos^2 C$, then ΔABC is

(A) a right angled triangle
(B) an isosceles triangle
(C) an equilateral triangle
(D) a scalene triangle

Answer: (D) a scalene triangle · The council's preliminary key

Q371 AP EAPCET 2023 · 15 May · Shift 2 MCQ

If ΔABC is a right angled isosceles triangle and $\angle C = 90^\circ$, then $r : r_3 =$

(A) $\sqrt{2}+1 : \sqrt{2}-1$
(B) $\sqrt{2}-1 : \sqrt{2}+1$
(C) $\sqrt{2} : 1$
(D) $1 : \sqrt{2}$

Answer: (B) $\sqrt{2}-1 : \sqrt{2}+1$ · The council's preliminary key

Q372 AP EAPCET 2023 · 15 May · Shift 2 MCQ

In ΔABC, if $a\cos^2\frac{C}{2} + c\cos^2\frac{A}{2} = \frac{3b}{2}$, then $a + c : b =$

(A) $1 : 1$
(B) $3 : 2$
(C) $2 : 1$
(D) $4 : 3$

Answer: (C) $2 : 1$ · The council's preliminary key

Q373 TS EAMCET 2023 · 14 May · Shift 1 MCQ

If $\cos\theta = \frac{-3}{5}$ and $\pi < \theta < \frac{3\pi}{2}$, then $\tan\frac{\theta}{2} + \sin\frac{\theta}{2} + 2\cos\frac{\theta}{2} =$

(A) -1
(B) 1
(C) -2
(D) 2

Answer: (C) -2 · The council's preliminary key

Q374 TS EAMCET 2023 · 14 May · Shift 1 MCQ

In ΔABC, if $a : b : c = 4 : 5 : 6$, then the ratio of the circumradius to its inradius is

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(A) $16 : 7$
(B) $25 : 11$
(C) $5 : 4$
(D) $9 : 5$

Answer: (A) $16 : 7$ · The council's preliminary key

Q375 TS EAMCET 2023 · 14 May · Shift 1 MCQ

The perimeter of a ΔABC is 6 times the arithmetic mean of the values of the sine of its angles. If its side BC is of unit length, then $\angle A =$

(A) $\frac{\pi}{6}$
(B) $\frac{\pi}{3}$
(C) $\frac{\pi}{2}$
(D) π

Answer: (A) $\frac{\pi}{6}$ · The council's preliminary key

Q376 TS EAMCET 2023 · 14 May · Shift 2 MCQ

If $\frac{\sin^4 x}{2} + \frac{\cos^4 x}{3} = \frac{1}{5}$, then $27\sec^6\alpha + 8\,\text{cosec}^6\,\alpha =$

(A) 250
(B) 125
(C) 175
(D) 350

Answer: (A) 250 · The council's preliminary key

Q377 TS EAMCET 2023 · 14 May · Shift 2 MCQ

If $\tan\beta = \frac{n\sin\alpha\cos\alpha}{1 - n\cos^2\alpha}$, then $\tan(\alpha+\beta)\cdot\cot\alpha =$

(A) $\frac{-1}{n-1}$
(B) $n+1$
(C) $1-n$
(D) $\frac{1}{n+1}$

Answer: (A) $\frac{-1}{n-1}$ · The council's preliminary key

Q378 TS EAMCET 2023 · 14 May · Shift 2 MCQ

If $\cos A + \cos B + \cos C = 0 = \sin A + \sin B + \sin C$, then $\cos(A-B) + \cos(B-C) + \cos(C-A) =$

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(A) 0
(B) $\frac{1}{2}$
(C) $\frac{3}{2}$
(D) $\frac{-3}{2}$

Answer: (D) $\frac{-3}{2}$ · The council's preliminary key

Q379 TS EAMCET 2023 · 14 May · Shift 2 MCQ

In ΔABC, if a, b, c are in arithmetic progression and $\mathrm{A} = 2\mathrm{C}$, then $\mathrm{b} : \mathrm{c} =$

(A) 4:5
(B) 2:3
(C) 5:4
(D) 5:6

Answer: (C) 5:4 · The council's preliminary key

Q380 TS EAMCET 2023 · 14 May · Shift 2 MCQ

Assertion (A): In ΔABC, if $r = 6$, $r_2 = 36$, $R = 15$ then $c^2 + a^2 = b^2$

Reason (R): In ΔABC, if $r : R : r_2 = 1 : 2.5 : 6$ then $\mathrm{B} = 90^\circ$

The correct option among the following is

(A) Both (A) and (R) are true. (R) is a correct explanation of (A)
(B) Both (A) and (R) are true, but (R) is not a correct explanation of (A)
(C) (A) is true and (R) is false
(D) (A) is false and (R) is true

Answer: (A) Both (A) and (R) are true. (R) is a correct explanation of (A) · The council's preliminary key

Q381 TS EAMCET 2023 · 13 May · Shift 1 MCQ

If $\cot\theta = -\frac{2}{3}$ and θ does not lie in the 4th quadrant, then $\frac{(5\sin\theta+\cos\theta)^2}{\tan\theta+\cot\theta} =$

(A) -13
(B) -6
(C) $-\frac{1734}{169}$
(D) 13

Answer: (B) -6 · The council's preliminary key

Q382 TS EAMCET 2023 · 13 May · Shift 1 MCQ

If $540^\circ < \theta < 630^\circ$ and $\tan\theta = \frac{5}{12}$, then $\dfrac{\cos\frac{\theta}{2} - 5\sin\frac{\theta}{2}}{\sqrt{-(12\sec\theta + 5\csc\theta)}} =$

(A) -26
(B) 26
(C) 1
(D) -1

Answer: (C) 1 · The council's preliminary key

Q383 TS EAMCET 2023 · 13 May · Shift 1 MCQ

If $A+B+C+D=2\pi$, then $\cos A-\cos B+\cos C-\cos D=$

(A) $-4\sin\frac{A+B}{2}\cos\frac{A+C}{2}\sin\frac{A+D}{2}$
(B) $4\sin\frac{A+B}{2}\sin\frac{A+C}{2}\sin\frac{A+D}{2}$
(C) $-4\sin\frac{A+B}{2}\sin\frac{A+C}{2}\sin\frac{A+D}{2}$
(D) $4\sin\frac{A+B}{2}\cos\frac{A+C}{2}\sin\frac{A+D}{2}$

Answer: (D) $4\sin\frac{A+B}{2}\cos\frac{A+C}{2}\sin\frac{A+D}{2}$ · The council's preliminary key

Q384 TS EAMCET 2023 · 13 May · Shift 1 MCQ

In ΔABC, if A is an acute angle, $b=6$, $c=9$ and $\sin A=\frac{2\sqrt{14}}{9}$, then $3a(\cos B+\cos C)=$

(A) 14
(B) 20
(C) 17
(D) 23

Answer: (B) 20 · The council's preliminary key

Q385 TS EAMCET 2023 · 13 May · Shift 1 MCQ

If the roots of the equation $x^3-11x^2+36x-36=0$ are the ex-radii of a triangle ABC then the perimeter of the triangle ABC is

(A) 24
(B) 18
(C) 12
(D) 9

Answer: (C) 12 · The council's preliminary key

Q386 TS EAMCET 2023 · 13 May · Shift 2 MCQ

$\sin 6^\circ+\sin 54^\circ+\sin 126^\circ+\cos 156^\circ=$

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(A) $\frac{\sqrt{5}+1}{4}$
(B) $\frac{\sqrt{5}-1}{4}$
(C) $-\frac{1}{2}$
(D) $\frac{3}{4}$

Answer: (A) $\frac{\sqrt{5}+1}{4}$ · The council's preliminary key

Q387 TS EAMCET 2023 · 13 May · Shift 2 MCQ

If $\tan\alpha = \frac{-12}{5}$, $\cot\beta = \frac{7}{24}$, α does not belong to second quadrant and β does not belong to first quadrant, then $\sqrt{13}\sin\frac{\alpha}{2} + \cos\frac{\beta}{2} + \tan\frac{\alpha}{2}\cot\frac{\beta}{2} =$

(A) $\frac{31}{10}$
(B) $\frac{19}{10}$
(C) $\frac{21}{10}$
(D) $\frac{-9}{10}$

Answer: (B) $\frac{19}{10}$ · The council's preliminary key

Q388 TS EAMCET 2023 · 13 May · Shift 2 MCQ

$\cos\frac{\pi}{7}\cos\frac{2\pi}{7}\cos\frac{3\pi}{7}\cos\frac{\pi}{14}\cos\frac{3\pi}{14}\cos\frac{5\pi}{14} =$

(A) $\frac{1}{16}\left[\sin\frac{\pi}{7} + \sin\frac{2\pi}{7} + \sin\frac{3\pi}{7}\right]$
(B) $\frac{1}{8}\left[\sin\frac{2\pi}{7} + \sin\frac{3\pi}{7} - \sin\frac{\pi}{7}\right]$
(C) $\frac{1}{32}\left[\sin\frac{2\pi}{7} + \sin\frac{3\pi}{7} - \sin\frac{\pi}{7}\right]$
(D) $\frac{1}{32}\left[\sin\frac{\pi}{7} - \sin\frac{2\pi}{7} + \sin\frac{3\pi}{7}\right]$

Answer: (C) $\frac{1}{32}\left[\sin\frac{2\pi}{7} + \sin\frac{3\pi}{7} - \sin\frac{\pi}{7}\right]$ · The council's preliminary key

Q389 TS EAMCET 2023 · 13 May · Shift 2 MCQ

In triangle ABC, if b = 6, c = 7 and $\tan\frac{A}{2} = \frac{1}{\sqrt{6}}$, then the inradius of ΔABC is

(A) $\sqrt{\frac{2}{3}}$
(B) $\frac{2\sqrt{6}}{9}$
(C) $\frac{\sqrt{2}}{9}$
(D) $\frac{2\sqrt{6}}{3}$

Answer: (D) $\frac{2\sqrt{6}}{3}$ · The council's preliminary key

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Q390 TS EAMCET 2023 · 13 May · Shift 2 MCQ

In ΔABC, if a = 7, b = 8 and c = 9 then $\frac{1}{r_1^2}+\frac{1}{r_2^2}+\frac{1}{r_3^2}=$

(A) $\frac{97}{360}$
(B) $\frac{5}{72}$
(C) $\frac{169}{360}$
(D) $\frac{67}{72}$

Answer: (B) $\frac{5}{72}$ · The council's preliminary key

Q391 TS EAMCET 2023 · 12 May · Shift 1 MCQ

For $0 \leq x \leq \pi$, if $81^{\sin^2 x}+81^{\cos^2 x}=30$, then x =

(A) $\frac{\pi}{6}$
(B) $\frac{\pi}{4}$
(C) $\frac{\pi}{15}$
(D) $\frac{\pi}{8}$

Answer: (A) $\frac{\pi}{6}$ · The council's preliminary key

Q392 TS EAMCET 2023 · 12 May · Shift 1 MCQ

In an isosceles right angled triangle, a straight line is drawn from the mid point of one of the equal sides to the opposite vertex. Then a pair of possible values of the cotangents of the two angles so formed at that vertex are

(A) 1 and 2
(B) 2 and 3
(C) 3 and 4
(D) 4 and 5

Answer: (B) 2 and 3 · The council's preliminary key

Q393 TS EAMCET 2023 · 12 May · Shift 1 MCQ

$\frac{(1+\tan 32^\circ)}{(1-\tan 48^\circ)}=$

(A) 1
(B) 2
(C) 3
(D) 4

Answer: (A) 1 · The council's preliminary key

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Q394 TS EAMCET 2023 · 12 May · Shift 1 MCQ

In a triangle ABC, if $r_1 = 2r_2 = 3r_3$, then $\frac{a}{b} + \frac{b}{c} + \frac{c}{a} =$

(A) $\frac{75}{60}$
(B) $\frac{155}{60}$
(C) $\frac{176}{60}$
(D) $\frac{191}{60}$

Answer: (D) $\frac{191}{60}$ · The council's preliminary key

Q395 TS EAMCET 2023 · 12 May · Shift 1 MCQ

$\sin\alpha + \cos\alpha = m \Rightarrow \sin^6\alpha + \cos^6\alpha =$

(A) $\frac{4 + 3\left(m^2 - 1\right)^2}{4}$
(B) $\frac{4 - 3\left(m^2 - 1\right)^2}{4}$
(C) $\frac{3 + 4\left(m^2 - 1\right)^2}{4}$
(D) $\frac{4 - 3\left(m^2 + 1\right)^2}{4}$

Answer: (B) $\frac{4 - 3\left(m^2 - 1\right)^2}{4}$ · The council's preliminary key

Q396 TS EAMCET 2023 · 12 May · Shift 2 MCQ

If $\frac{2\sin\theta}{1+\cos\theta+\sin\theta} = y$, then $\frac{1-\cos\theta+\sin\theta}{1+\sin\theta} =$

(A) y
(B) $\frac{1}{y}$
(C) $1 - y$
(D) $1 + y$

Answer: (A) y · The council's preliminary key

Q397 TS EAMCET 2023 · 12 May · Shift 2 MCQ

If $\cos\frac{\pi}{7} \cdot \cos\frac{2\pi}{7} \cdot \cos\frac{4\pi}{7} = \frac{\sin\frac{8\pi}{7}}{8\sin\frac{\pi}{7}}$, then, $\sin\frac{\pi}{14} \cdot \sin\frac{3\pi}{14} \cdot \sin\frac{5\pi}{14} \cdot \sin\frac{7\pi}{14} \cdot \sin\frac{9\pi}{14} \cdot \sin\frac{11\pi}{14} \cdot \sin\frac{13\pi}{14} =$

(A) $\frac{1}{16}$
(B) $\frac{1}{32}$
(C) $\frac{1}{64}$
(D) $\frac{1}{128}$

Answer: (C) $\frac{1}{64}$ · The council's preliminary key

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Q398 TS EAMCET 2023 · 12 May · Shift 2 MCQ

If $f(\theta)=\cos^3\theta+\cos^3\left(\frac{2\pi}{3}+\theta\right)+\cos^3\left(\theta-\frac{2\pi}{3}\right)$ then $f\left(\frac{\pi}{5}\right)=$

(A) $-\frac{3(\sqrt{5}-1)}{16}$
(B) $\frac{3\sqrt{10-2\sqrt{5}}}{8}$
(C) $\frac{3\sqrt{10+2\sqrt{5}}}{8}$
(D) $\frac{3(\sqrt{5}+1)}{16}$

Answer: (A) $-\frac{3(\sqrt{5}-1)}{16}$ · Checked by our team

Q399 TS EAMCET 2023 · 12 May · Shift 2 MCQ

PQR is an isosceles triangle with $PQ=PR$. If the radius of the circum circle of ΔPQR is equal to the length of PQ, then $\angle P=$

(A) 30°
(B) 60°
(C) 45°
(D) 120°

Answer: (D) 120° · The council's preliminary key

Q400 TS EAMCET 2023 · 12 May · Shift 2 MCQ

In ΔABC, if $\frac{\cos A}{a}=\frac{\cos B}{b}=\frac{\cos C}{c}$ and side $a=2$, then area of the ΔABC (in sq. units) is

(A) $8\sqrt{2}$
(B) $4\sqrt{3}$
(C) $\frac{\sqrt{3}}{2}$
(D) $\sqrt{3}$

Answer: (D) $\sqrt{3}$ · The council's preliminary key

Q401 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

If $\sin(A+B)\sin(A-B)+\cos(A+B)\cos(A-B)=\frac{1}{2}$ and $0<B<\frac{\pi}{2}$, then $B=$

(A) $\frac{\pi}{6}$
(B) $\frac{\pi}{4}$
(C) $\frac{\pi}{3}$
(D) $\frac{5\pi}{12}$

Answer: (A) $\frac{\pi}{6}$ · The council's preliminary key

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Q402 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

$$\frac{1}{\sin 250^\circ}+\frac{\sqrt{3}}{\cos 290^\circ}=$$

(A) $\frac{1}{\sqrt{3}}$

(B) 4

(C) $\frac{4}{\sqrt{3}}$

(D) 1

Answer: (B) 4 · The council's preliminary key

Q403 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

If $A+B+C=\frac{\pi}{2}$, then $\sqrt{2}\cos\left(\frac{\pi}{4}-A\right)+\sqrt{2}\cos\left(\frac{\pi}{4}-B\right)+\sqrt{2}\cos\left(\frac{\pi}{4}-C\right)+1=$

(A) $4\sqrt{2}\cos\frac{A}{2}\cos\frac{B}{2}\cos\frac{C}{2}$

(B) $4\cos\frac{A}{2}\cos\frac{B}{2}\cos\frac{C}{2}$

(C) $4\sin\frac{A}{2}\sin\frac{B}{2}\cos\frac{C}{2}$

(D) $4\sqrt{2}\sin\frac{A}{2}\sin\frac{B}{2}\cos\frac{C}{2}$

Answer: (A) $4\sqrt{2}\cos\frac{A}{2}\cos\frac{B}{2}\cos\frac{C}{2}$ · The council's preliminary key

Q404 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

In triangle ABC, if $A=\frac{\pi}{3}$ and $B=\frac{\pi}{4}$ then $\frac{a^2-b^2}{c^2}=$

(A) $2-\sqrt{3}$

(B) $2+\sqrt{3}$

(C) $\sqrt{2}-1$

(D) $\sqrt{2}+1$

Answer: (A) $2-\sqrt{3}$ · The council's preliminary key

Q405 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

In a triangle ABC, if $a=3, b=7, c=8$ then $\sin\frac{B}{2}\tan\frac{C-A}{2}=$

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(A) $\frac{15\sqrt{3}}{22\sqrt{7}}$
(B) $\frac{5\sqrt{2}}{11\sqrt{7}}$
(C) $\frac{5\sqrt{3}}{11}$
(D) $\frac{5\sqrt{3}}{22}$

Answer: (D) $\frac{5\sqrt{3}}{22}$ · The council's preliminary key

Q406 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

If $\sin A = \frac{-7}{25}$, $\cos B = \frac{8}{17}$, A does not lie in the 3rd quadrant and B does not lie in the 1st quadrant, then $8\tan A - 5\cot B =$

(A) 0
(B) $\frac{1}{3}$
(C) $\frac{1}{2}$
(D) 1

Answer: (B) $\frac{1}{3}$ · The council's preliminary key

Q407 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

If $\sin\theta - \cos\theta = \frac{1}{\sqrt{3}}$, then $\sin(2\theta) + \cos(4\theta) + \sin(6\theta) =$

(A) $\frac{37}{27}$
(B) $\frac{-37}{27}$
(C) $\frac{-43}{27}$
(D) $\frac{43}{27}$

Answer: (D) $\frac{43}{27}$ · The council's preliminary key

Q408 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

If $a\tan\alpha + b\tan\beta = (a+b)\tan\left(\frac{\alpha+\beta}{2}\right)$ and $\alpha - \beta \neq 2n\pi$ then $\frac{\cos\beta}{\cos\alpha} =$

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(A) $\frac{a}{b}$
(B) $\frac{a+b}{a-b}$
(C) $\frac{a^2-b^2}{a^2+b^2}$
(D) $\frac{b}{a}$

Answer: (D) $\frac{b}{a}$ · The council's preliminary key

Q409 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

In triangle ABC, if $a=7,\ b=8,\ \tan C=\frac{3\sqrt{5}}{2}$ and C is an acute angle, then $c=$

(A) $\sqrt{145}$
(B) 5
(C) 11
(D) 9

Answer: (D) 9 · The council's preliminary key

Q410 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

In a triangle ABC, if $\frac{a}{\tan A}=\frac{b}{\tan B}=\frac{c}{\tan C}$ then $\cos^2 A+\cos^2 B+\cos^2 C=$

(A) $\sqrt{2}$
(B) $\frac{3}{4}$
(C) $\frac{\sqrt{3}+1}{2}$
(D) $\frac{2\sqrt{3}-1}{2}$

Answer: (B) $\frac{3}{4}$ · The council's preliminary key

Q411 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

In triangle ABC, if $a=7,\ b=10,\ c=11$, then $\frac{R}{r}=$

(A) 14
(B) 77
(C) $\frac{24}{11}$
(D) $\frac{55}{24}$

Answer: (D) $\frac{55}{24}$ · The council's preliminary key

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Q412 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

If $|\sin\alpha - \cos\alpha| = \frac{3}{4}$, then $|\sec 2\alpha - \tan 2\alpha| =$

(A) $\frac{12}{17}$
(B) $\frac{4}{\sqrt{23}}$
(C) $\frac{3}{\sqrt{23}}$
(D) $\frac{7}{\sqrt{23}}$

Answer: (C) $\frac{3}{\sqrt{23}}$ · The council's preliminary key

Q413 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

If $\frac{1}{\sin 45^\circ \sin 46^\circ} + \frac{1}{\sin 46^\circ \sin 47^\circ} + \ldots$ upto 45 terms $= \frac{1}{\sin x^\circ}$, then $\sin\left(\frac{\pi}{2}x\right) =$

(A) 0
(B) $\sin 1$
(C) 1
(D) $\cos 1$

Answer: (C) 1 · The council's preliminary key

Q414 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

If the sides of a triangle ABC whose perimeter is 42 are in arithmetic progression, its circum-radius is $\frac{65}{8}$ and $\mathrm{B} < \mathrm{A} < \mathrm{C}$ then $\sin \mathrm{A} =$

(A) $\frac{4}{13}$
(B) $\frac{28}{65}$
(C) $\frac{56}{65}$
(D) $\frac{14}{65}$

Answer: (C) $\frac{56}{65}$ · The council's preliminary key

Q415 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

In a triangle ABC, if $a = 7$, $c = 11$, $\cos \mathrm{A} = \frac{17}{22}$, $\cos \mathrm{C} = \frac{1}{14}$ then $b \tan\frac{\mathrm{B}}{2} \tan\frac{\mathrm{C} - \mathrm{A}}{2} =$

(A) 18
(B) 14
(C) 2
(D) 9

Answer: (C) 2 · The council's preliminary key

Q416 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

In any triangle ABC, $r^2 \cot\frac{A}{2}\cot\frac{B}{2}\cot\frac{C}{2} =$

(A) Δ
(B) 2Δ
(C) Δ^2
(D) 5Δ

Answer: (A) Δ · The council's preliminary key

Q417 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

If $-i$ and α are the roots of the equation $iz^2 - 2(i+1)z + (2-i) = 0$, $\tan\theta = \frac{-1}{2}$ and $\theta \in 4^{\text{th}}$ quadrant, then $5^3\cos 6\theta =$

(A) -117
(B) -44
(C) 117
(D) 44

Answer: (A) -117 · The council's preliminary key

Q418 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

If θ does not lie in the second quadrant and $\tan\theta = \frac{-3}{4}$, then $\tan\frac{\theta}{2} + \sin 2\theta =$

(A) $\frac{97}{75}$
(B) $\frac{-97}{75}$
(C) $\frac{-47}{75}$
(D) $\frac{47}{75}$

Answer: (B) $\frac{-97}{75}$ · The council's preliminary key

Q419 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

$\cos^2 76^\circ + \sin^2 46^\circ + \sin 76^\circ \cos 46^\circ =$

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(A) $\frac{3}{4}$
(B) 1
(C) $\frac{5}{4}$
(D) 2

Answer: (C) $\frac{5}{4}$ · The council's preliminary key

Q420 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

In a triangle ABC, AD and BE are medians. If $AD = 4$, $\angle DAB = \frac{\pi}{6}$ and $\angle ABE = \frac{\pi}{3}$ then the area of ΔABC is

(A) $\frac{14}{3\sqrt{3}}$
(B) $\frac{28}{3\sqrt{3}}$
(C) $\frac{11}{3\sqrt{3}}$
(D) $\frac{32}{3\sqrt{3}}$

Answer: (D) $\frac{32}{3\sqrt{3}}$ · The council's preliminary key

Q421 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

If S is the circumcentre of a triangle ABC, $a = 5, b = 6, c = 9$ and $SB = \frac{27}{4\sqrt{2}}$ then $\sin 2C =$

(A) $\frac{4\sqrt{2}}{9}$
(B) $\frac{4\sqrt{2}}{27}$
(C) $\frac{-4\sqrt{2}}{27}$
(D) $\frac{-4\sqrt{2}}{9}$

Answer: (D) $\frac{-4\sqrt{2}}{9}$ · The council's preliminary key

Q422 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

In a triangle ABC, if $\frac{r}{r_1} = \frac{1}{2}$, then $4\tan\frac{A}{2}\left(\tan\frac{B}{2} + \tan\frac{C}{2}\right) =$

(A) 1
(B) 2
(C) 3
(D) 4

Answer: (B) 2 · The council's preliminary key

Q423 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

If A and B $(A > B)$ are acute angles, $\sin(A - B) = \frac{16}{65}$ and $\sin B = \frac{5}{13}$ then $\tan A + \cot A =$

(A) $\frac{25}{12}$
(B) $\frac{12}{25}$
(C) $\frac{5}{12}$
(D) $\frac{12}{5}$

Answer: (A) $\frac{25}{12}$ · The council's preliminary key

Q424 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

If $\tan A = \frac{2}{3}$, then $\sin 4A =$

(A) $\frac{8}{27}$
(B) $\frac{120}{169}$
(C) $\frac{144}{169}$
(D) $\frac{16}{27}$

Answer: (B) $\frac{120}{169}$ · The council's preliminary key

Q425 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

$$\frac{\sqrt{2}\cos 45^\circ + \cos 56^\circ + \cos 58^\circ - \cos 66^\circ}{\sqrt{2}\cos 28^\circ \cos 29^\circ \sin 33^\circ} =$$

(A) $\sqrt{2}$
(B) $2\sqrt{2}$
(C) $\frac{\sqrt{2}}{2}$
(D) $4\sqrt{2}$

Answer: (B) $2\sqrt{2}$ · The council's preliminary key

Q426 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

In a triangle ABC, if $(b+c)^2 \sin^2 \frac{A}{2} + (b-c)^2 \cos^2 \frac{A}{2} = K(1-\cos 2A)$, then $K =$

(A) R^2
(B) $2R^2$
(C) R
(D) $2R$

Answer: (B) $2R^2$ · The council's preliminary key

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Q427 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

In a triangle ABC, if $b = 7,\ c = 4\sqrt{3}$ and $A = \frac{\pi}{6}$ then $a \sin B \sin C =$

(A) $\frac{\sqrt{13}}{12}$
(B) $\frac{\sqrt{13}}{7\sqrt{3}}$
(C) $\frac{12}{\sqrt{13}}$
(D) $\frac{7\sqrt{3}}{\sqrt{13}}$

Answer: (D) $\frac{7\sqrt{3}}{\sqrt{13}}$ · The council's preliminary key

Q428 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

In triangle ABC, if BC is the hypotenuse, then $r_2 + r_3 =$

(A) $r_1 + r$
(B) a
(C) $r - r_1$
(D) $2(R + r)$

Answer: (B) a · The council's preliminary key

Q429 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

If $\tan 15^\circ$ and $\tan 30^\circ$ are the roots of the equation $x^2 + px + q = 0$, then $pq =$

(A) $\frac{6\sqrt{3}+10}{\sqrt{3}}$
(B) $\frac{10-6\sqrt{3}}{3}$
(C) $\frac{10+6\sqrt{3}}{3}$
(D) $\frac{10-6\sqrt{3}}{\sqrt{3}}$

Answer: (B) $\frac{10-6\sqrt{3}}{3}$ · The council's preliminary key

Q430 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

If $\cos x + \cos y = p$, $\sin x + \sin y = q$, then $\cos\left(\frac{x-y}{2}\right) =$

(A) $\pm\frac{\sqrt{p^2+q^2}}{2}$
(B) $\pm\frac{pq}{2}$
(C) $\pm\left(\frac{p+q}{2}\right)$
(D) $\pm\frac{\sqrt{p^2+q^2}}{4}$

Answer: (A) $\pm\frac{\sqrt{p^2+q^2}}{2}$ · The council's preliminary key

Q431 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

If $A+B+C=\frac{3\pi}{2}$ then $4\sin A\sin B\sin C+\cos 2A+\cos 2B+\cos 2C=$

(A) $-\sin(A+B+C)$

(B) $\cos(A+B+C)$

(C) $\sin(A+B+C)$

(D) $2-\cos(A+B+C)$

Answer: (A) $-\sin(A+B+C)$ · The council's preliminary key

Q432 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

In triangle ABC, if A is acute, C is obtuse, $\sin A=\frac{3\sqrt{3}}{14}$, $a=3$ and $b=5$, then $c=$

(A) $\frac{16}{7}$

(B) 7

(C) $\frac{14}{3}$

(D) 6

Answer: (B) 7 · The council's preliminary key

Q433 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

If Δ denotes the area of triangle ABC, then $(b\sin C+c\sin B)(b\cos C+c\cos B)=$

(A) $ab\cos C$

(B) 2Δ

(C) $bc\cos A$

(D) 4Δ

Answer: (D) 4Δ · The council's preliminary key

Q434 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

Let A be the area of in-circle and A_1, A_2, A_3 be the areas of ex-circles of a triangle. If $A_1=4, A_2=9, A_3=16$, then $A=$

(A) 81

(B) $\frac{61}{169}$

(C) $\frac{144}{61}$

(D) $\frac{144}{169}$

Answer: (D) $\frac{144}{169}$ · The council's preliminary key

Q435 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

$\cos\frac{\pi}{12}=$

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(A) $\frac{\sqrt{2}-\sqrt{3}}{2}$
(B) $\frac{\sqrt{2}+\sqrt{3}}{2}$
(C) $\frac{\sqrt{2}-\sqrt{6}}{4}$
(D) $\frac{\sqrt{2}+\sqrt{6}}{4}$

Answer: (D) $\frac{\sqrt{2}+\sqrt{6}}{4}$ · The council's preliminary key

Q436 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

$\cos^4\frac{\pi}{24}-\sin^4\frac{\pi}{24}=$

(A) $\frac{\sqrt{2}-\sqrt{3}}{2}$
(B) $\frac{\sqrt{2}+\sqrt{3}}{2}$
(C) $\frac{\sqrt{2}-\sqrt{6}}{4}$
(D) $\frac{\sqrt{2}+\sqrt{6}}{4}$

Answer: (D) $\frac{\sqrt{2}+\sqrt{6}}{4}$ · The council's preliminary key

Q437 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

The value of $\cos\left(\frac{7\pi}{12}\right)$ is

(A) $\frac{\sqrt{2}+\sqrt{3}}{4}$
(B) $\frac{\sqrt{2}-\sqrt{3}}{4}$
(C) $\frac{\sqrt{2}-\sqrt{6}}{4}$
(D) $\frac{\sqrt{2}+\sqrt{6}}{4}$

Answer: (C) $\frac{\sqrt{2}-\sqrt{6}}{4}$ · The council's preliminary key

Q438 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

In any triangle ABC, $\sin\frac{A}{2}\leq$

(A) $\frac{2a}{\sqrt{bc}}$
(B) $\frac{a}{2\sqrt{bc}}$
(C) $\frac{3a}{\sqrt{bc}}$
(D) $\frac{\sqrt{bc}}{2a}$

Answer: (B) $\frac{a}{2\sqrt{bc}}$ · The council's preliminary key

Q439 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

If $2\sin 2\theta=\sqrt{3}$, then $\theta=$

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(A) 15^0
(B) 27^0
(C) 30^0
(D) 40^0

Answer: (C) 30^0 · The council's preliminary key

Q440 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

In a triangle ABC, $(b+c)\sin\frac{A}{2} =$

(A) $a\cos A$
(B) $a\cos\left(\frac{B-C}{2}\right)$
(C) $a\sin\left(\frac{B+C}{2}\right)$
(D) $a\sin\left(\frac{B-C}{2}\right)$

Answer: (B) $a\cos\left(\frac{B-C}{2}\right)$ · The council's preliminary key

Q441 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

In a triangle ABC, if $a-2b+c=0$, then $\cot\left(\frac{A}{2}\right)\cdot\cot\left(\frac{C}{2}\right) =$

(A) 1
(B) 2
(C) 3
(D) 4

Answer: (C) 3 · The council's preliminary key

Q442 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

In a $\triangle ABC$, if $a=13$, $b=14$ and $c=15$, then $\sin\left(\frac{A}{2}\right) =$

(A) $\frac{1}{\sqrt{5}}$
(B) $\frac{1}{\sqrt{7}}$
(C) $\frac{3}{4}$
(D) $\frac{4}{5}$

Answer: (A) $\frac{1}{\sqrt{5}}$ · The council's preliminary key

Q443 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

If $1-\cot 23^0 = \frac{x}{1-\cot 22^0}$, then $x =$

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(A) 1
(B) 2
(C) $\frac{1}{2}$
(D) 3

Answer: (B) 2 · The council's preliminary key

Q444 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

In a triangle ABC, $\sin 2A + \sin 2B + \sin 2C =$

(A) $4 \sin A \sin B \sin C$
(B) $2 \sin A \sin B \sin C$
(C) $4 \cos A \cos B \cos C$
(D) $2 \sin A \cos B \cos C$

Answer: (A) $4 \sin A \sin B \sin C$ · The council's preliminary key

Q445 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

Let $\tan 30^0$ and $\tan 15^0$ be the roots of the quadratic equation $x^2 + ax + b = 0$, then $1 + a - b =$

(A) 0
(B) 1
(C) ab
(D) a^2b^2

Answer: (A) 0 · The council's preliminary key

Q446 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

$\tan x + \frac{\cos x}{1 + \sin x} =$

(A) $\tan 2x$
(B) $\operatorname{cosec} x$
(C) $\sec x$
(D) $\cos 2x$

Answer: (C) $\sec x$ · The council's preliminary key

Q447 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

In a triangle ABC, if $r_1 > r_2 > r_3$, then which of the following is true?

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(A) $a > b > c$
(B) $a > b,\ b < c$
(C) $a < b < c$
(D) $a < b,\ b > c$

Answer: (A) $a > b > c$ · The council's preliminary key

Q448 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

In a triangle ABC, if $\angle A = 60^0$, then $(a+b+c)(b+c-a) =$

(A) $3bc$
(B) $2abc$
(C) abc
(D) $a+b+c$

Answer: (A) $3bc$ · The council's preliminary key

Q449 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

In a triangle ABC, if $r_1 = 12$, $r_2 = 18$ and $r_3 = 36$, then $b =$

(A) 12
(B) 6
(C) 24
(D) 18

Answer: (C) 24 · The council's preliminary key

Q450 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

If r_1, r_2 and r_3 of a triangle ABC are in Harmonic progression, then a, b and c will be in

(A) Arithmetic progression
(B) Geometric progression
(C) Harmonic progression
(D) Arthmetico-Geometric progression

Answer: (A) Arithmetic progression · The council's preliminary key

Q451 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

$1 + \cot^2 30^0 - \sec^2 45^0 =$

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(A) $\frac{1}{4}$

(B) $\frac{1-\sqrt{3}}{2}$

(C) 2

(D) 0

Answer: (C) 2 · The council's preliminary key

Q452 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

The smallest integer n such that $\frac{1}{\sin 45^0 \sin 46^0} + \frac{1}{\sin 47^0 \sin 48^0} + \ldots + \frac{1}{\sin 133^0 \sin 134^0} = \frac{1}{\sin(n^0)}$ is

(A) 1

(B) 2

(C) 3

(D) 4

Answer: (A) 1 · The council's preliminary key

Q453 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

$\sin(x+y)\sec x \sec y =$

(A) $\cos x \cos y$

(B) $\tan x - \tan y$

(C) $\cos x + \cos y$

(D) $\tan x + \tan y$

Answer: (D) $\tan x + \tan y$ · The council's preliminary key

Q454 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

If $\sin\left(x+\frac{\pi}{3}\right) + \sin\left(x-\frac{\pi}{3}\right) = 1$, then the value of x in the interval $[0, \pi]$

(A) $\frac{\pi}{2}$

(B) $\frac{\pi}{3}$

(C) 0

(D) $\frac{\pi}{4}$

Answer: (A) $\frac{\pi}{2}$ · The council's preliminary key

Q455 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

In Δ ABC, if $3\sin A + 4\cos B = 6$ and $4\sin B + 3\cos A = 1$, then the angle C is

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(A) $\frac{\pi}{2}$
(B) $\frac{\pi}{3}$
(C) $\frac{\pi}{4}$
(D) $\frac{\pi}{6}$

Answer: (D) $\frac{\pi}{6}$ · The council's preliminary key

Q456 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

The sides of a triangle ABC are given by $a = 3$, $b = 5$ and $c = 3$. Then $\cos A =$

(A) $2/6$
(B) $1/6$
(C) $2/3$
(D) $5/6$

Answer: (D) $5/6$ · The council's preliminary key

Q457 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

In a triangle ABC, if $a = 2$, $b = 3$ and $\sin A = 2/3$, then $\angle B =$

(A) $\pi/2$
(B) $\pi/6$
(C) $\pi/3$
(D) $\pi/4$

Answer: (A) $\pi/2$ · The council's preliminary key

Q458 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

In a ΔABC, $a : b : c = 4 : 5 : 6$. The ratio of radius of the circumcircle to that of the incircle is

(A) $7 : 16$
(B) $17 : 16$
(C) $16 : 17$
(D) $16 : 7$

Answer: (D) $16 : 7$ · The council's preliminary key

Q459 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

The value of $\sin\left(\frac{5\pi}{24}\right) \cdot \cos\left(\frac{\pi}{24}\right)$ is

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(A) $\frac{1+\sqrt{2}}{4}$
(B) $1+\sqrt{2}$
(C) $\frac{1-\sqrt{2}}{4}$
(D) $1-\sqrt{2}$

Answer: (A) $\frac{1+\sqrt{2}}{4}$ · The council's preliminary key

Q460 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

$\frac{\sin x}{1+\cos x}+\frac{1+\cos x}{\sin x}=$

(A) $2\sec x$
(B) $2\operatorname{cosec} x$
(C) $\tan 2x$
(D) $\sin 2x$

Answer: (B) $2\operatorname{cosec} x$ · The council's preliminary key

Q461 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

$2\cot^2\theta-\cot\theta-3=$

(A) $(2\cot\theta-3)(\cot\theta+1)$
(B) $(2\cot\theta-1)(\cot\theta+3)$
(C) $(2\cot\theta+3)(\cot\theta-1)$
(D) $(2\cot\theta+1)(\cot\theta-3)$

Answer: (A) $(2\cot\theta-3)(\cot\theta+1)$ · The council's preliminary key

Q462 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

$\cos\theta\,(\operatorname{cosec}\theta-\sec\theta)-\cot\theta=$

(A) -1
(B) 1
(C) 0
(D) $\cos^2\theta-\tan^2\theta$

Answer: (A) -1 · The council's preliminary key

Q463 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

Let ABC be an acute-angled triangle with area R. Then $\sqrt{a^2b^2-4R^2}+\sqrt{b^2c^2-4R^2}+\sqrt{c^2a^2-4R^2}=$

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(A) $a+b+c$
(B) $a^2+b^2+c^2$
(C) $\frac{a^2+b^2+c^2}{2}$
(D) $2(a^2+b^2+c^2)$

Answer: (C) $\frac{a^2+b^2+c^2}{2}$ · The council's preliminary key

Q464 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

In a triangle ABC, if a = 4, b = 5 and c = 7, then $\sin\left(\frac{A}{2}\right) =$

(A) $\sqrt{\frac{3}{35}}$
(B) $\sqrt{\frac{35}{3}}$
(C) $\sqrt{\frac{2}{35}}$
(D) $\sqrt{\frac{1}{35}}$

Answer: (A) $\sqrt{\frac{3}{35}}$ · The council's preliminary key

Q465 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

In any triangle ABC, $\frac{\cos 2A}{a^2} - \frac{\cos 2B}{b^2} =$

(A) a^2-b^2
(B) $\frac{1}{a^2}-\frac{1}{b^2}$
(C) a^2+b^2
(D) $\frac{1}{a^2}+\frac{1}{b^2}$

Answer: (B) $\frac{1}{a^2}-\frac{1}{b^2}$ · The council's preliminary key

Q466 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

In a triangle ABC, let $\angle C = \frac{\pi}{2}$. If r and R are respectively inradius and circumradius of ABC, then R + r =

(A) $\frac{a-b}{2}$
(B) $\frac{a+b}{2}$
(C) $a+b$
(D) $a-b$

Answer: (B) $\frac{a+b}{2}$ · The council's preliminary key

Q467 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

Let a and b be non-negative real numbers. If $\sin x + a\cos x = b$, then $|a\sin x - \cos x| =$

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(A) $\sqrt{a^2-b^2+1}$
(B) $\sqrt{b^2-a^2+1}$
(C) $\sqrt{1+a^2+b^2}$
(D) $\sqrt{a^2+b^2-1}$

Answer: (A) $\sqrt{a^2-b^2+1}$ · The council's preliminary key

Q468 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

$\sqrt{\sin^4 x+4\cos^2 x}-\sqrt{\cos^4 x+4\sin^2 x}=$

(A) $1-\cos 2x$
(B) $\tan 2x$
(C) $\sin 2x$
(D) $\cos 2x$

Answer: (D) $\cos 2x$ · The council's preliminary key

Q469 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

$\sin 22\frac{1}{2}^\circ=$

(A) $\sqrt{\frac{2+\sqrt{2}}{4}}$
(B) $\frac{2+\sqrt{2}}{4}$
(C) $\sqrt{\frac{2-\sqrt{2}}{4}}$
(D) $\frac{2-\sqrt{2}}{4}$

Answer: (C) $\sqrt{\frac{2-\sqrt{2}}{4}}$ · The council's preliminary key

Q470 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

The value of $\cos^4 x$ is

(A) $\frac{3}{8}+\frac{1}{2}\cos 2x+\frac{1}{8}\cos 4x$
(B) $\frac{3}{8}-\frac{1}{2}\cos 2x+\frac{1}{8}\cos 4x$
(C) $\frac{3}{8}-\frac{1}{8}\cos 4x+\frac{1}{2}\cos 2x$
(D) $\frac{1}{8}\cos 4x+\frac{1}{2}\cos 2x-\frac{3}{8}$

Answer: (A) $\frac{3}{8}+\frac{1}{2}\cos 2x+\frac{1}{8}\cos 4x$ · The council's preliminary key

Q471 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

Let x, y, z be real numbers and $x \geq y \geq z \geq \frac{\pi}{12}$. If $x+y+z=\frac{\pi}{2}$, then the minimum value of $\cos x \cdot \sin y \cdot \cos z$ is

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(A) $\frac{1}{2}$
(B) $\frac{1}{4}$
(C) $\frac{1}{6}$
(D) $\frac{1}{8}$

Answer: (D) $\frac{1}{8}$ · The council's preliminary key

Q472 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

In the triangle ABC, if $a = 7$, $b = 6$ and $A = 120^0$, then the approximate value of B is

(A) 47.9^0
(B) 44.9^0
(C) 59.9^0
(D) 61.9^0

Answer: (A) 47.9^0 · The council's preliminary key

Q473 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

In any triangle ABC, $a(b\cos C - c\cos B) =$

(A) $b - c$
(B) $b + c$
(C) $b^2 - c^2$
(D) $b^2 + c^2$

Answer: (C) $b^2 - c^2$ · The council's preliminary key

Q474 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

The length of the sides of a triangle are 13, 14 & 15. If R and r respectively denote circumradius and inradius of this triangle, then $8R - r =$

(A) 41
(B) 51
(C) 61
(D) 71

Answer: (C) 61 · The council's preliminary key

Q475 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

If θ is any angle, then $\sin^2\theta\ \cos^2\theta =$

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(A) $1-\cos 2\theta$

(B) $1-\cos 4\theta$

(C) $\frac{1}{4}(1-\cos 4\theta)$

(D) $\frac{1}{8}(1-\cos 4\theta)$

Answer: (D) $\frac{1}{8}(1-\cos 4\theta)$ · The council's preliminary key

Q476 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

$(4\cos^2 9^0-3)(4\cos^2 27^0-3)=$

(A) $\sin 9^0$

(B) $\cos 9^0$

(C) $\tan 9^0$

(D) $\cot 9^0$

Answer: (C) $\tan 9^0$ · The council's preliminary key

Q477 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

$\frac{1}{1+\sin\theta}+\frac{1}{1-\sin\theta}=$

(A) $2\cos^2\theta$

(B) $-2\cos^2\theta$

(C) $2\tan^2\theta$

(D) $2\sec^2\theta$

Answer: (D) $2\sec^2\theta$ · The council's preliminary key

Q478 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

$\frac{\cos x}{1+\sin x}+\tan x=$

(A) 1

(B) $\cos x+\sin x$

(C) $\sin^2 x$

(D) $\sec x$

Answer: (D) $\sec x$ · The council's preliminary key

Q479 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

$\cos^2 45^0+\cos^2 135^0+\cos^2 225^0+\cos^2 315^0=$

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(A) 1
(B) 2
(C) 0
(D) -1

Answer: (B) 2 · The council's preliminary key

Q480 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

In a triangle ABC, $\frac{a-b}{a+b} =$

(A) $\cot\left(\frac{A-B}{2}\right)\cot\frac{C}{2}$
(B) $\tan\left(\frac{A+B}{2}\right)\tan\frac{C}{2}$
(C) $\tan\left(\frac{A-B}{2}\right)\tan\frac{C}{2}$
(D) $\tan\left(\frac{A+B+C}{2}\right)$

Answer: (C) $\tan\left(\frac{A-B}{2}\right)\tan\frac{C}{2}$ · The council's preliminary key

Q481 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

In a triangle ABC, if $\angle A = 60^0$, then $\frac{b}{c+a}+\frac{c}{a+b} =$

(A) $a+b+c$
(B) 0
(C) 1
(D) abc

Answer: (C) 1 · The council's preliminary key

Q482 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

In a triangle ABC, if $a\cos A = b\cos B$, where $a \neq b$, then ΔABC is

(A) Obtuse-angled triangle
(B) Equilateral triangle
(C) Acute angled triangle
(D) Right angled triangle

Answer: (D) Right angled triangle · The council's preliminary key

Q483 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

If $\sin^4\theta\cos^2\theta = \sum_{n=0}^{\infty} a_{2n}\cos 2n\theta$ then the least n for which $a_{2n} = 0$ is

(A) 1
(B) 2
(C) 3
(D) 4

Answer: (D) 4 · The council's preliminary key

Q484 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

If $\sin\theta = -\frac{3}{4}$, then $\sin 2\theta =$

(A) $\frac{3\sqrt{7}}{8}$
(B) $-\frac{3\sqrt{7}}{8}$
(C) $\frac{2\sqrt{3}}{7}$
(D) $-\frac{2\sqrt{3}}{7}$

Options (2) or (1) were accepted. More than one answer was accepted. · The council's preliminary key

Q485 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

$\frac{1}{\sin 1^0 \sin 2^0} + \frac{1}{\sin 2^0 \sin 3^0} + \ldots + \frac{1}{\sin 89^0 \sin 90^0} =$

(A) $\frac{\cos 1^0}{\sin 1^0}$
(B) $\frac{\cos 1^0}{\sin^2 1^0}$
(C) $\frac{\sin 1^0}{\cos 1^0}$
(D) $\frac{\sin^2 1^0}{\cos 1^0}$

Answer: (B) $\frac{\cos 1^0}{\sin^2 1^0}$ · The council's preliminary key

Q486 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

Which of the following trigonometric values are negative?
I) $\sin(-292^0)$
II) $\tan(-193^0)$
III) $\cos(-207^0)$
IV) $\cot(-222^0)$

(A) II, III and IV
(B) III only
(C) I and III
(D) II and III

Answer: (A) II, III and IV · Checked by our team

Q487 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

If $\sin\theta + \operatorname{cosec}\theta = 4$, then $\sin^2\theta + \operatorname{cosec}^2\theta =$

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(A) 12
(B) 18
(C) 16
(D) 14

Answer: (D) 14 · The council's preliminary key

Q488 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

$\sin^2\frac{2\pi}{3}+\cos^2\frac{5\pi}{6}-\tan^2\frac{3\pi}{4}=$

(A) 0
(B) $\frac{1}{2}$
(C) 1
(D) $\frac{1}{3}$

Answer: (B) $\frac{1}{2}$ · The council's preliminary key

Q489 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

In any triangle ABC, $\frac{\cos A}{a}+\frac{\cos B}{b}+\frac{\cos C}{c}=$

(A) $a^2+b^2+c^2$
(B) $\frac{a^2+b^2+c^2}{2abc}$
(C) $\frac{2abc}{a^2+b^2+c^2}$
(D) $a+b+c$

Answer: (B) $\frac{a^2+b^2+c^2}{2abc}$ · The council's preliminary key

Q490 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

In a triangle ABC, if $r_1=36$, $r_2=18$ and $r_3=12$, then $s=$

(A) 6
(B) 8
(C) 16
(D) 36

Answer: (D) 36 · The council's preliminary key

Q491 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

In a triangle ABC, $a=6$, $b=5$ and $c=4$, then $\cos 2A=$

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(A) $-\frac{31}{32}$
(B) $-\frac{15}{16}$
(C) $\frac{31}{32}$
(D) $\frac{15}{16}$

Answer: (A) $-\frac{31}{32}$ · The council's preliminary key

Q492 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

A true statement among the following identities is

(A) $\cos 5\theta = 16\cos^5\theta - 20\cos^3\theta - 5\cos\theta$
(B) $\cos 5\theta = 20\cos^3\theta - 16\cos^5\theta + 5\cos\theta$
(C) $\cos 5\theta = 16\cos^5\theta + 20\cos^3\theta - 5\cos\theta$
(D) $\cos 5\theta = 16\cos^5\theta - 20\cos^3\theta + 5\cos\theta$

Answer: (D) $\cos 5\theta = 16\cos^5\theta - 20\cos^3\theta + 5\cos\theta$ · The council's preliminary key

Q493 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

All the pairs (x, y) that satisfy the inequality $2^{\sqrt{\sin^2 x - 2\sin x + 5}} \cdot \frac{1}{4^{\sin^2 y}} \leq 1$ also satisfy the equation

(A) $2|\sin x| = \sin y$
(B) $2\sin x = \sin y$
(C) $\sin x = 2\sin y$
(D) $\sin x = |\sin y|$

Answer: (D) $\sin x = |\sin y|$ · The council's preliminary key

Q494 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

If $\cos\theta - \sin\theta = \sqrt{5}\ \sin\theta$, then $\cos\theta + 4\sin\theta =$

(A) $5\cos\theta$
(B) $\sqrt{5}\ \sin\theta$
(C) $5\sin\theta$
(D) $\sqrt{5}\ \cos\theta$

Answer: (D) $\sqrt{5}\ \cos\theta$ · The council's preliminary key

Q495 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

In a triangle ABC, $\tan\frac{A}{2}\tan\frac{B}{2} + \tan\frac{B}{2}\tan\frac{C}{2} + \tan\frac{C}{2}\tan\frac{A}{2} =$

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(A) 0
(B) 1
(C) $\frac{1}{2}$
(D) π

Answer: (B) 1 · The council's preliminary key

Q496 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

$\sec^2 x + 5\tan x + 5 =$

(A) $(\tan x + 2)(\tan x + 3)$
(B) $(\tan x + 1)(\tan x + 5)$
(C) $(\tan x - 2)(\tan x - 3)$
(D) $(\sin x + 2)(\sin x + 5)$

Answer: (A) $(\tan x + 2)(\tan x + 3)$ · The council's preliminary key

Q497 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

Let α, β be two real number such that $\pi < (\alpha - \beta) < 3\pi$. If $\sin\alpha + \sin\beta = \frac{-21}{65}$ and $\cos\alpha + \cos\beta = \frac{-27}{65}$, then $\cos\left(\frac{\beta-\alpha}{2}\right) =$

(A) $\frac{3}{\sqrt{130}}$
(B) $\frac{-3}{\sqrt{130}}$
(C) $\frac{130}{\sqrt{3}}$
(D) $\frac{-\sqrt{130}}{3}$

Answer: (B) $\frac{-3}{\sqrt{130}}$ · The council's preliminary key

Q498 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

A farmer owns a triangular plot in Guntur. He measures the lengths of the sides of his property as 4 cm, 5 cm and 7 cm. Then the area of land of the farmer in sq. cm is

(A) $2\sqrt{6}$
(B) $4\sqrt{6}$
(C) $\sqrt{6}$
(D) $8\sqrt{6}$

Answer: (B) $4\sqrt{6}$ · The council's preliminary key

Q499 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

In a triangle, if $b = 5, c = 6, \tan\frac{A}{2} = \frac{1}{\sqrt{2}}$, then $a =$

(A) $\sqrt{41}$
(B) $\sqrt{21}$
(C) $\sqrt{14}$
(D) $\sqrt{22}$

Answer: (A) $\sqrt{41}$ · The council's preliminary key

Q500 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

In a triangle ABC $s\left[\frac{r_1-r}{a}+\frac{r_2-r}{b}+\frac{r_3-r}{c}\right]=$

(A) $\frac{1}{r_1}+\frac{1}{r_2}+\frac{1}{r_3}$
(B) $r_1+r_2+r_3$
(C) $r_1r_2r_3$
(D) $\frac{1}{r}-\frac{1}{r_1}+\frac{1}{r_2}+\frac{1}{r_3}$

Answer: (B) $r_1+r_2+r_3$ · The council's preliminary key

Q501 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

If the identity $\cos^4\theta = a\cos 4\theta + b\cos 2\theta + c$ holds for some a, b, c $\in \mathbb{Q}$, then (a, b, c) =

(A) $\left(\frac{1}{8},\frac{3}{8},\frac{1}{2}\right)$
(B) $\left(\frac{1}{8},\frac{1}{2},\frac{3}{8}\right)$
(C) $\left(\frac{1}{2},\frac{1}{8},\frac{3}{8}\right)$
(D) $\left(\frac{1}{2},\frac{3}{8},\frac{1}{8}\right)$

Answer: (B) $\left(\frac{1}{8},\frac{1}{2},\frac{3}{8}\right)$ · The council's preliminary key

Q502 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

The value of $\frac{\sin\theta+\sin 3\theta}{\cos\theta+\cos 3\theta}$ is

(A) $\cos 2\theta$
(B) $\cot 2\theta$
(C) $\tan 2\theta$
(D) $\operatorname{cosec}\theta+\sin\theta$

Answer: (C) $\tan 2\theta$ · The council's preliminary key

Q503 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

If $(1+\tan 1^0)(1+\tan 2^0)\ldots(1+\tan 45^0)=2^n$, then n =

(A) 0
(B) 32
(C) 23
(D) 2

Answer: (C) 23 · The council's preliminary key

Q504 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

$$\frac{\cos\theta}{1-\tan\theta}+\frac{\sin\theta}{1-\cot\theta}=$$

(A) $\cos\theta-\sin\theta$
(B) $\sin\theta-\cos\theta$
(C) $\cos\theta+\sin\theta$
(D) $(1-\tan\theta)\sin\theta$

Answer: (C) $\cos\theta+\sin\theta$ · The council's preliminary key

Q505 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

In a triangle ABC, if $a \neq b$, $\frac{a\cos A-b\cos B}{a\cos B-b\cos A}+\cos C=$

(A) 0
(B) 1
(C) 2
(D) -1

Answer: (A) 0 · The council's preliminary key

Q506 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

If in a triangle ABC, a = 2, b = 3 and c = 4, then $\tan\left(\frac{A}{2}\right)=$

(A) $\sqrt{\frac{3}{15}}$
(B) $\sqrt{\frac{4}{15}}$
(C) $\sqrt{\frac{2}{15}}$
(D) $\sqrt{\frac{1}{15}}$

Answer: (D) $\sqrt{\frac{1}{15}}$ · The council's preliminary key

Q507 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

If the angles of a triangle ABC are in the ratio 1:2:3, then the corresponding sides are in the ratio

(A) $\sqrt{3} : 2 : 1$
(B) $\sqrt{3} : 1 : 2$
(C) $1 : \sqrt{3} : 2$
(D) $1 : 2 : \sqrt{3}$

Answer: (C) $1 : \sqrt{3} : 2$ · The council's preliminary key

Q508 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

In a triangle ABC, $r_1 \cot \frac{A}{2} + r_2 \cot \frac{B}{2} + r_3 \cot \frac{C}{2} =$

(A) s
(B) 2s
(C) 3s
(D) s/2

Answer: (C) 3s · The council's preliminary key

Q509 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

A true statement among the following identities is

(A) $\sin 5\theta = 16\cos^4\theta \sin\theta - 12\cos^2\theta \sin\theta + \sin\theta$
(B) $\sin 5\theta = 16\cos^4\theta - 12\cos^2\theta + 1$
(C) $\sin 5\theta = 16\cos^4\theta \sin\theta + 12\cos^2\theta \sin\theta - \sin\theta$
(D) $\sin 5\theta = 16\cos^4\theta \sin\theta + 12\cos^2\theta \sin\theta + \sin\theta$

Answer: (A) $\sin 5\theta = 16\cos^4\theta \sin\theta - 12\cos^2\theta \sin\theta + \sin\theta$ · The council's preliminary key

Q510 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

If $A + B + C = \pi$, $\cos B = \cos A \cos C$, then $\tan A \tan C =$

(A) 0
(B) 1
(C) 2
(D) $\frac{1}{2}$

Answer: (C) 2 · The council's preliminary key

Q511 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

In a triangle ABC, $\left(\tan\frac{A}{2}\tan\frac{B}{2}\tan\frac{C}{2}\right)^2 \leq$

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(A) $\frac{1}{27}$
(B) $\frac{1}{18}$
(C) $\frac{1}{9}$
(D) $\frac{1}{3}$

Answer: (A) $\frac{1}{27}$ · The council's preliminary key

Q512 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

The value of $\tan\left(\frac{7\pi}{8}\right)$ is

(A) $\sqrt{2}-1$
(B) $1-\sqrt{2}$
(C) $1+\sqrt{2}$
(D) $\frac{1}{1+\sqrt{2}}$

Answer: (B) $1-\sqrt{2}$ · The council's preliminary key

Q513 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

$1+\sec^2 x \sin^2 x =$

(A) $\sin 2x$
(B) $\sin^2 x$
(C) $\tan^2 x$
(D) $\sec^2 x$

Answer: (D) $\sec^2 x$ · The council's preliminary key

Q514 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

In a triangle ABC, $2(bc\cos A + ac\cos B + ab\cos C) =$

(A) $a+b+c$
(B) $2(a+b+c)$
(C) $a^2+b^2+c^2$
(D) $2(a^2+b^2+c^2)$

Answer: (C) $a^2+b^2+c^2$ · The council's preliminary key

Q515 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

In a triangle ABC, $\frac{a}{b}=2+\sqrt{3}$ and $\angle C = 60^0$. Then the measure of $\angle A$ is

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(A) 95^0
(B) 65^0
(C) 105^0
(D) 115^0

Answer: (C) 105^0 · The council's preliminary key

Q516 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

If a = 2, b = 3, c = 4 in a triangle ABC, then $\cos C =$

(A) $\frac{1}{4}$
(B) $\frac{-1}{4}$
(C) $\frac{1}{2}$
(D) $\frac{-1}{2}$

Answer: (B) $\frac{-1}{4}$ · The council's preliminary key

Q517 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

In a triangle ABC, $(b+c)\cos A + (c+a)\cos B + (a+b)\cos C =$

(A) $2\,abc$
(B) abc
(C) $a+b+c$
(D) $(a+b+c)/2abc$

Answer: (C) $a+b+c$ · The council's preliminary key

Q518 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

The value of $\cos^4\left(\frac{\pi}{8}\right) + \cos^4\left(\frac{3\pi}{8}\right) + \cos^4\left(\frac{5\pi}{8}\right) + \cos^4\left(\frac{7\pi}{8}\right)$ is

(A) 0
(B) $\frac{1}{2}$
(C) $\frac{3}{2}$
(D) 1

Answer: (C) $\frac{3}{2}$ · The council's preliminary key

Q519 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

If $0 < \theta < \frac{\pi}{2}$ and $\sec\theta + \tan\theta = m$ and $\operatorname{cosec}\theta + \cot\theta = n$ then $\sec\theta + \operatorname{cosec}\theta =$

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(A) $\frac{(m+1)(mn-1)}{2mn}$
(B) $\frac{(m+n)(mn+1)}{mn}$
(C) $\frac{(m+n)(mn+1)}{2mn}$
(D) $\frac{2(m+n)(mn+1)}{mn}$

Answer: (C) $\frac{(m+n)(mn+1)}{2mn}$ · The council's preliminary key

Q520 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

If $0 < x < \pi$ and $\cos x + \sin x = \frac{1}{2}$ then $\tan x =$

(A) $\frac{4-\sqrt{7}}{3}$
(B) $\frac{4+\sqrt{7}}{3}$
(C) $\frac{-(4+\sqrt{7})}{3}$
(D) $\frac{-4+\sqrt{7}}{3}$

Answer: (C) $\frac{-(4+\sqrt{7})}{3}$ · The council's preliminary key

Q521 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

In a triangle ABC, $(b+c)\cos A + (c+a)\cos B + (a+b)\cos C$ is

(A) Area of the triangle
(B) Half the perimeter of the triangle
(C) $2R\sin A\sin B\sin C$
(D) $2s$ (perimeter of the triangle)

Answer: (D) $2s$ **(perimeter of the triangle)** · The council's preliminary key

Q522 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

ΔABC is right angled at 'B', then the diameter of the incircle of the triangle is

(A) $2(c+a-b)$
(B) $c+a-2b$
(C) $c+a-b$
(D) $c-a+2b$

Answer: (C) $c+a-b$ · The council's preliminary key

Q523 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

If $\cos A + \cos C = 4\sin^2\frac{B}{2}$, then the sides of triangle are in

(A) Arithmetic progression
(B) Geometric progression
(C) Harmonic progression
(D) Arithmetico-Geometric progression

Answer: (A) Arithmetic progression · The council's preliminary key

Q524 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

In a triangle ABC, suppose none on (sic) the angles are multiples of $\frac{\pi}{2}$, then what is the value $\cot A \cot B + \cot B \cot C + \cot A \cot C =$

(A) ∞
(B) 1
(C) -1
(D) 0

Answer: (B) 1 · The council's preliminary key

Q525 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

If $\alpha = \frac{180^\circ}{7}$, then $3\sin\alpha - 4\sin^3\alpha$ is equal to

(A) $\cos 4\alpha$
(B) $\sin 4\alpha$
(C) $\cos 3\alpha$
(D) 0

Answer: (B) $\sin 4\alpha$ · The council's preliminary key

Q526 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

In any ΔABC, $b^2 \sin 2C + c^2 \sin B =$

(A) Δ
(B) 2Δ
(C) 3Δ
(D) 4Δ

Answer: (D) 4Δ · The council's preliminary key

Q527 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

Number of triangles in which $\tan A + \tan B + \tan C = \cot A + \cot B + \cot C$ is _____

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(A) 1
(B) Infinite
(C) 0
(D) 2

Answer: (C) 0 · The council's preliminary key

Q528 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

$(1-\tan 348^\circ)(1+\cot 417^\circ) =$

(A) $3\sqrt{3}$
(B) 2
(C) $\frac{2}{\sqrt{3}}$
(D) 1

Answer: (B) 2 · The council's preliminary key

Q529 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

If $0 < \theta < \frac{\pi}{2}$ and $\sin\theta\cos\theta = \frac{12}{25}$ then $\sin^4\theta + \cos^4\theta =$

(A) $\frac{327}{625}$
(B) $\frac{337}{625}$
(C) $\frac{347}{625}$
(D) $\frac{340}{625}$

Answer: (B) $\frac{337}{625}$ · The council's preliminary key

Q530 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

In a triangle ΔABC, if $\tan(A/2), \tan(B/2), \tan(C/2)$ are in Arithmetic progression, then which of the following option is always correct?

(A) $\cos A, \cos B, \cos C$ are in Arithmetic Progression
(B) $\cos A, \cos B, \cos C$ are in Geometric Progression
(C) $\cos A, \cos B, \cos C$ are in harmonic Progression
(D) No conclusion can be made with given data

Answer: (A) $\cos A, \cos B, \cos C$ are in Arithmetic Progression · The council's preliminary key

Q531 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

Let a, b, c denote the lengths of sides of BC, CA, AB of ΔABC. In ΔABC, $\angle BAC = 30^\circ, \angle ABC = 60^\circ$ Then $a : b : c$ is _____

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(A) $2 : \sqrt{3} : 1$
(B) $1 : \sqrt{3} : 2$
(C) $1 : 2 : \sqrt{3}$
(D) $2 : 1 : \sqrt{3}$

Answer: (B) $1 : \sqrt{3} : 2$ · The council's preliminary key

Q532 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

In a triangle ABC, if $b = 2, c = 3$ and $\angle B = \frac{\pi}{6}$, then 'a' satisfies the equation

(A) $a^2 + 3\sqrt{3}a + 5 = 0$
(B) $a^2 + 3\sqrt{3}a - 5 = 0$
(C) $a^2 - 3\sqrt{3}a + 5 = 0$
(D) $\sqrt{3}a^2 + 3a + 5 = 0$

Answer: (C) $a^2 - 3\sqrt{3}a + 5 = 0$ · The council's preliminary key

Q533 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

In ΔABC, if $a : b : c = 4 : 5 : 6$ then the ratio between the circumradius and the inradius is _____

(A) $\frac{16}{7}$
(B) $\frac{16}{9}$
(C) $\frac{7}{16}$
(D) $\frac{11}{7}$

Answer: (A) $\frac{16}{7}$ · The council's preliminary key

Q534 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

Let $z = \cos\theta + i\sin\theta$. Then the value of $\sum_{m=1}^{15} I_m(z^{2m-1})$ at $\theta = 2^\circ$ is

(A) $\frac{1}{\sin 2^\circ}$
(B) $\frac{1}{3\sin 2^\circ}$
(C) $\frac{1}{2\sin 2^\circ}$
(D) $\frac{1}{4\sin 2^\circ}$

Answer: (D) $\frac{1}{4\sin 2^\circ}$ · The council's preliminary key

Q535 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

$\cos^2 10^\circ + \cos^2 50^\circ - \sin 40^\circ \sin 80^\circ =$

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(A) $\frac{1}{4}$
(B) $\frac{1}{2}$
(C) $\frac{4}{3}$
(D) $\frac{3}{4}$

Answer: (D) $\frac{3}{4}$ · The council's preliminary key

Q536 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

If $\alpha + \beta = \gamma$ then what is the value of $\cos^2\alpha + \cos^2\beta + \cos^2\gamma =$

(A) $1 + 2\cos^3\alpha\cos^3\beta\cos^3\gamma$
(B) $1 + 2\cos^2\alpha\cos^2\beta\cos^2\gamma$
(C) $1 + 2\cos\alpha\cos\beta\cos\gamma$
(D) $1 + 4\cos\alpha\cos\beta\cos\gamma$

Answer: (C) $1 + 2\cos\alpha\cos\beta\cos\gamma$ · The council's preliminary key

Q537 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

The equation $\sin^4 x + \cos^4 x = a$ has real solutions, then

(A) $1 < a < \frac{5}{2}$
(B) $\frac{1}{2} \le a \le 1$
(C) $a \le \frac{1}{2}$
(D) $0 < a < 1$

Answer: (B) $\frac{1}{2} \le a \le 1$ · The council's preliminary key

Q538 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

The solution of the equation $[\sin x + \cos x]^{1+\sin 2x} = 2$, where $-\pi \le x \le \pi$ is

(A) $\frac{\pi}{2}$
(B) π
(C) $\frac{\pi}{4}$
(D) $\frac{3\pi}{4}$

Answer: (C) $\frac{\pi}{4}$ · The council's preliminary key

Q539 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

In a triangle ABC, $2ac\sin\frac{1}{2}(A - B + C) =$

(A) $a^2+b^2+c^2$
(B) $a^2+b^2-c^2$
(C) $a^2+c^2-b^2$
(D) $b^2+c^2-a^2$

Answer: (C) $a^2+c^2-b^2$ · The council's preliminary key

Q540 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

In triangle ABC, $a=6\,\text{cm}$, $b=10\,\text{cm}$ and $c=14\,\text{cm}$. Then the sum of the acute angles of the triangle is _____

(A) 180°
(B) 120°
(C) 90°
(D) 60°

Answer: (D) 60° · The council's preliminary key

Q541 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

If 'P' is a point on the equation $\overline{AD}$ of the triangle ABC, and $\angle ABP=\frac{2B}{3}$, then AP is equal to

(A) $C\sin\frac{B}{3}$
(B) $2C\sin\frac{B}{3}$
(C) $C\sin\frac{2B}{3}$
(D) $2C\sin\frac{2B}{3}$

Answer: (B) $2C\sin\frac{B}{3}$ · The council's preliminary key

Q542 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

$\sin\frac{\pi}{16}\sin\frac{3\pi}{16}\sin\frac{5\pi}{16}\sin\frac{7\pi}{16}=$

(A) $\frac{\sqrt{2}}{16}$
(B) $\frac{1}{8}$
(C) $\frac{1}{16}$
(D) $\frac{\sqrt{2}}{32}$

Answer: (A) $\frac{\sqrt{2}}{16}$ · The council's preliminary key

Q543 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

If $\sin\theta + \csc\theta = 2$, then the value of $\sin^{10}\theta + \csc^{10}\theta =$

(A) 2
(B) 2^{10}
(C) 2^{9}
(D) 2^{8}

Answer: (A) 2 · The council's preliminary key

Q544 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

Given $\frac{\sin 1^\circ}{\sin x^\circ \sin(x+1)^\circ} = \cot x^\circ - \cot(x+1)^\circ$, then the value of $\frac{1}{\sin 45^\circ \sin 46^\circ} + \frac{1}{\sin 46^\circ \sin 47^\circ} + \cdots + \frac{1}{\sin 89^\circ \sin 90^\circ}$ is

(A) $\sin 1^\circ$
(B) $\cot 1^\circ$
(C) $-\cot 1^\circ$
(D) $\operatorname{cosec} 1^\circ$

Answer: (D) $\operatorname{cosec} 1^\circ$ · The council's preliminary key

Q545 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

If the angles A, B, C of ΔABC are in arithmetic progression, then

(A) $b^2 = a^2 + c^2 - ac$
(B) $c^2 = b^2 + a^2 - ab$
(C) $a^2 = b^2 + c^2 - bc$
(D) $c^2 = a^2 + b^2$

Answer: (A) $b^2 = a^2 + c^2 - ac$ · The council's preliminary key

Q546 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

In a ΔABC, $\operatorname{cosec} A\,(\sin B \cdot \cos C + \cos B \cdot \sin C)$ equals to

(A) $\frac{c}{a}$
(B) $\frac{a}{c}$
(C) 1
(D) $\frac{a}{b}$

Answer: (C) 1 · The council's preliminary key

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Q547 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

What is the greatest angle of the triangle whose sides are $x^2+x+1,\ 2x+1,\ x^2-1$?

(A) $A=120^\circ$

(B) $A=90^\circ$

(C) $A=135^\circ$

(D) $A=60^\circ$

Answer: (A) $A=120^\circ$ · The council's preliminary key

Q548 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

$\sin\frac{2\pi}{5}+\sin\frac{4\pi}{5}+\sin\frac{6\pi}{5}+\sin\frac{8\pi}{5}=$

(A) 0

(B) 1

(C) $\frac{\sqrt{2}}{2}$

(D) $\frac{1}{2}$

Answer: (A) 0 · The council's preliminary key

Q549 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

If $x\cos\theta=y\cos\left(\theta+\frac{2\pi}{3}\right)=z\cos\left(\theta+\frac{4\pi}{3}\right)$ then $\frac{1}{x}+\frac{1}{y}+\frac{1}{z}=$

(A) 1

(B) 2

(C) 0

(D) 3

Answer: (C) 0 · The council's preliminary key

Q550 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

If $0\le\theta\le2\pi,\ 0\le\alpha\le2\pi$ and $\sec^{2018}\theta+\operatorname{cosec}^{2018}\alpha=2$ then the value of $\cos^{2020}\theta+\sin^{2022}\alpha=$

(A) $\frac{3}{2}$

(B) $\frac{1}{2^{2020}}$

(C) 1

(D) 2

Answer: (D) 2 · The council's preliminary key

Q551 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

If $\sin\left(5x+\frac{\pi}{4}\right)=0$, then '$x$' is equal to

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(A) $\frac{-\pi}{20}+\frac{\pi}{2}n\ (n\in z)$
(B) $\frac{\pi}{20}+\frac{\pi}{5}n\ (n\in z)$
(C) $\frac{-\pi}{5}+\frac{\pi}{5}n\ (n\in z)$
(D) $\frac{-\pi}{20}+\frac{\pi}{5}n\ (n\in z)$

Answer: (D) $\frac{-\pi}{20}+\frac{\pi}{5}n\ (n\in z)$ · The council's preliminary key

Q552 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

If the angles of a triangle are in the ration (sic) $1:2:3$, the corresponding sides are in the ratio

(A) $2:\sqrt{3}:1$
(B) $1:\sqrt{3}:2$
(C) $1:2:3$
(D) $\sqrt{3}:2:1$

Answer: (B) $1:\sqrt{3}:2$ · The council's preliminary key

Q553 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

If in a triangle ABC, $s(s-a)=(s-b)(s-c)$, then

(A) $\angle A=\frac{\pi}{4}$
(B) $\angle B=\frac{\pi}{3}$
(C) $\angle A=\frac{\pi}{2}$
(D) $\angle B=\frac{\pi}{2}$

Answer: (C) $\angle A=\frac{\pi}{2}$ · The council's preliminary key

Q554 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

If in a triangle $\left(1-\frac{r_1}{r_2}\right)\left(1-\frac{r_1}{r_3}\right)=2$, then the triangle is

(A) Right angled triangle
(B) Equilateral triangle
(C) $\angle B=60^\circ$
(D) $\angle C=45^\circ$

Answer: (A) Right angled triangle · The council's preliminary key

Q555 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

Determine the value of 'a' in $\tan 70^\circ-\tan 20^\circ=a\cdot\tan 50^\circ$?

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(A) -4
(B) 4
(C) -2
(D) 2

Answer: (D) 2 · The council's preliminary key

Q556 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

$\sin^2 5^\circ + \sin^2 10^\circ + \sin^2 15^\circ + \cdots + \sin^2 90^\circ =$

(A) $8\frac{1}{2}$
(B) 9
(C) $9\frac{1}{2}$
(D) $4\frac{1}{2}$

Answer: (C) $9\frac{1}{2}$ · The council's preliminary key

Q557 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

Minimum value of $5\tan^2\alpha + \dfrac{9}{\tan^2\alpha} + 4\sec^2\alpha$ is

(A) 24
(B) 22
(C) 32
(D) 28

Answer: (B) 22 · The council's preliminary key

Q558 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

Solve the following equation $\sin x + \sqrt{3}\cos x = \sqrt{2}$

(A) $x = 2n\pi + \frac{\pi}{6} \pm \frac{\pi}{4}$
(B) $x = 2n\pi + \frac{\pi}{6} \pm \frac{\pi}{3}$
(C) $x = 0$
(D) $x = 2n\pi + \frac{\pi}{6} \pm \frac{\pi}{2}$

Answer: (A) $x = 2n\pi + \frac{\pi}{6} \pm \frac{\pi}{4}$ · The council's preliminary key

Q559 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

In triangle ABC, $\dfrac{16Rs\Delta \sin\frac{A}{2}\sin\frac{B}{2}\cos\frac{C}{2}}{s-c}$ is equal to

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(A) $\frac{r_1 r_2}{r_3}$

(B) $r_1 \cdot r_2 \cdot r_3$

(C) $r_1 + r_2 + r_3$

(D) $4r_1 r_2 r_3$

Answer: (D) $4r_1 r_2 r_3$ · The council's preliminary key

Q560 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

What is the value of $\cos\left(22\frac{1}{2}\right)^\circ =$

(A) $\sqrt{\frac{\sqrt{2}-1}{2\sqrt{2}}}$

(B) $\sqrt{\frac{\sqrt{2}+1}{2\sqrt{2}}}$

(C) $\sqrt{2}-1$

(D) $\sqrt{2}+1$

Answer: (B) $\sqrt{\frac{\sqrt{2}+1}{2\sqrt{2}}}$ · The council's preliminary key

Q561 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

If $\cos\theta = -\sqrt{\frac{3}{2}}$ and $\sin\alpha = \frac{-3}{5}$ where 'θ' does not lie in the third quadrant, then the value of $\frac{2\tan\alpha + \sqrt{3}\tan\theta}{\cot^2\theta + \cos\alpha}$ is equal to

(A) $\frac{7}{22}$

(B) $\frac{5}{22}$

(C) $\frac{9}{22}$

(D) $\frac{22}{5}$

Answer: (B) $\frac{5}{22}$ · The council's preliminary key

Q562 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

If $\tan\beta = \frac{\tan\alpha + \tan\gamma}{1 + \tan\alpha\tan\gamma}$ then $\frac{\sin 2\alpha + \sin 2\gamma}{1 + \sin 2\alpha \sin 2\gamma} =$

(A) $\sin 2\beta$
(B) $\cos 2\beta$
(C) $\tan 2\beta$
(D) $\sec 2\beta$

Answer: (A) $\sin 2\beta$ · The council's preliminary key

Q563 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

If $\sin\left(\frac{\pi}{4}\cot\theta\right) = \cos\left(\frac{\pi}{4}\tan\theta\right)$, then $\theta =$

(A) $2n\pi + \frac{\pi}{4}$
(B) $2n\pi \pm \frac{\pi}{4}$
(C) $2n\pi - \frac{\pi}{4}$
(D) $n\pi + \frac{\pi}{4}$

Answer: (D) $n\pi + \frac{\pi}{4}$ · The council's preliminary key

Q564 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

In ΔABC, medians AD and BE are drawn. If $AD = 4$, $\angle DAB = \frac{\pi}{6}$ and $\angle ABE = \frac{\pi}{3}$ then the area of ΔABC is

(A) $\frac{8}{3}$ sq. units
(B) $\frac{16}{3}$ sq. units
(C) $\frac{32}{3\sqrt{3}}$ sq. units
(D) $\frac{64}{3}$ sq. units

Answer: (C) $\frac{32}{3\sqrt{3}}$ **sq. units** · The council's preliminary key

Q565 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

In a ΔABC, $2\Delta^2 = \frac{a^2b^2c^2}{a^2+b^2+c^2}$ then the triangle is _____

(A) Equilateral
(B) Isosceles
(C) Right angled
(D) Acute angled triangle

Answer: (C) Right angled · The council's preliminary key

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Q566 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

The sides of a triangle inscribed in a given circle subtend angles α, β, γ at the center. The minimum value of the A.M. of $\cos\left(\alpha+\frac{\pi}{2}\right), \cos\left(\beta+\frac{\pi}{2}\right)$ and $\cos\left(\gamma+\frac{\pi}{2}\right)$ is equal to

(A) $\frac{\sqrt{3}}{2}$
(B) $\frac{-\sqrt{3}}{2}$
(C) $\frac{-2}{\sqrt{3}}$
(D) $\sqrt{2}$

Answer: (B) $\frac{-\sqrt{3}}{2}$ · The council's preliminary key

Q567 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

Let θ be an angle in the standard position such that the point $(-5, 12)$ lies on its terminal side, then _____

(A) $|\sin\theta| = -\sin\theta$
(B) $|\cos\theta| = \cos\theta$
(C) $|\tan\theta| = -\tan\theta$
(D) $|\operatorname{cosec}\theta| = -\operatorname{cosec}\theta$

Answer: (C) $|\tan\theta| = -\tan\theta$ · The council's preliminary key

Q568 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

If $\cos\frac{\pi}{4}\cos\frac{\pi}{8}\cos\frac{\pi}{16}\cos\frac{\pi}{32} = 2^m \operatorname{cosec}\frac{\pi}{n}$ then $m+n=$

(A) 27
(B) 25
(C) 28
(D) 29

Answer: (C) 28 · The council's preliminary key

Q569 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

If $A+B+C=\frac{3\pi}{2}$, then $\cos 2A+\cos 2B+\cos 2C=$

(A) $1-4\sin A\sin B\sin C$
(B) $1+4\sin A\sin B\sin C$
(C) $1-2\sin A\sin B\sin C$
(D) $1+2\sin A\sin B\sin C$

Answer: (A) $1-4\sin A\sin B\sin C$ · The council's preliminary key

Q570 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

What is the value of $(a-b)^2\cos^2\frac{c}{2}+(a+b)^2\sin^2\frac{c}{2}=$

(A) c^2

(B) a^2+b^2

(C) $a^2+b^2+c^2$

(D) $a^2-b^2+c^2$

Answer: (A) c^2 · The council's preliminary key

Q571 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

In $\triangle ABC$, suppose the radius of the circle opposite to an angle A is denoted by r_1, similarly $r_2 \leftrightarrow$ angle B, $r_3 \leftrightarrow$ angle C. If $r_1=2, r_2=3, r_3=6$, then what is $(a,b,c)=$

(A) $(3,4,5)$

(B) $(3,5,4)$

(C) $(5,4,3)$

(D) $(5,3,4)$

Answer: (A) $(3,4,5)$ · The council's preliminary key

Q572 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

If in $\triangle ABC$, $a\tan A+b\tan B=(a+b)\tan\left(\frac{A+B}{2}\right)$, then which of the following holds?

(A) $A=B$

(B) $A=2B$

(C) $A=\frac{1}{2}B$

(D) $A>B$

Answer: (A) $A=B$ · The council's preliminary key

Q573 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

$\mathrm{Tan}\,2\alpha.\mathrm{Tan}(30^\circ-\alpha)+\mathrm{Tan}\,2\alpha.\mathrm{Tan}(60^\circ-\alpha)+\mathrm{Tan}(60^\circ-\alpha).\mathrm{Tan}(30^\circ-\alpha)$ is equal to

(A) $\tan 3\alpha$

(B) $\tan^2 2\alpha-\tan^2 60^\circ$

(C) 1

(D) 0

Answer: (C) 1 · The council's preliminary key

Q574 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

If $\sin\alpha-\cos\alpha=m$ and $\sin 2\alpha=n-m^2$, where $-\sqrt{2}\le m\le\sqrt{2}$, then 'n' is equal to

(A) 0
(B) 1
(C) 2
(D) -2

Answer: (B) 1 · The council's preliminary key

Q575 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

The value of 'x' satisfying the equation $3\csc x = 4\sin x$ are

(A) $\frac{\pi}{6}, \frac{\pi}{3}$
(B) $\pm\frac{\pi}{6}$
(C) $\pm\frac{\pi}{3}$
(D) $\frac{\pi}{3}, \frac{\pi}{4}$

Answer: (C) $\pm\frac{\pi}{3}$ · The council's preliminary key

Q576 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

In a triangle ABC, if $a = 3$, $b = 4$ and $\sin A = \frac{3}{4}$ then $\angle CBA =$?

(A) 60°
(B) 75°
(C) 90°
(D) 45°

Answer: (C) 90° · The council's preliminary key

Q577 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

In $\triangle ABC$, $A = 75^\circ$, $B = 45^\circ$ then the value of $b + c\sqrt{2} =$

(A) a
(B) $3a$
(C) $2a$
(D) $4a$

Answer: (C) $2a$ · The council's preliminary key

Q578 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

In $\triangle ABC$, suppose the radius of the circle opposite to an angle A is denoted by r_1, similarly $r_2 \leftrightarrow$ angle B, $r_3 \leftrightarrow$ angle C. If 'r' is the radius of inscribed circle then, what is the value of $\frac{ab - r_1 r_2}{r_3} =$

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(A) $r_1r_2r_3$

(B) r

(C) $r_1r_2\frac{r_3}{2}$

(D) $\frac{r}{2}$

Answer: (B) r · The council's preliminary key

Q579 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

In a triangle ABC, if $3\sin A + 4\cos B = 6$ and $4\sin B + 3\cos A = 1$, then $\sin(A+B)$ is equal to

(A) 1

(B) $\frac{1}{2}$

(C) 0

(D) $\cos C$

Answer: (B) $\frac{1}{2}$ · The council's preliminary key

Q580 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

$\tan\alpha + 2\tan 2\alpha + 4\tan 4\alpha + 8\cot 8\alpha =$

(A) $\tan 16\alpha$

(B) 0

(C) $\cot\alpha$

(D) $\tan\alpha$

Answer: (C) $\cot\alpha$ · The council's preliminary key

Q581 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

If $f(x) = \frac{\cot x}{1+\cot x}$ and $\alpha + \beta = \frac{5\pi}{4}$ then the value of $f(\alpha)f(\beta) =$

(A) $\frac{3}{2}$

(B) $\frac{-3}{2}$

(C) $\frac{-1}{2}$

(D) $\frac{1}{2}$

Answer: (D) $\frac{1}{2}$ · The council's preliminary key

Q582 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

If $\theta \in [0, 2\pi]$ and $\cos 2\theta = \cos\theta + \sin\theta$ then the sum of all values of θ satisfying the equation is _____

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(A) $\frac{21\pi}{2}$
(B) $\frac{11\pi}{4}$
(C) $\frac{24\pi}{4}$
(D) $\frac{31\pi}{4}$

Answer: (C) $\frac{24\pi}{4}$ · The council's preliminary key

Q583 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

In ΔABC, suppose the radius of the circle opposite to an angle A is denoted by r_1, similarly $r_2 \leftrightarrow$ angle B, $r_3 \leftrightarrow$ angle C. If $r_1 = 2, r_2 = 3, r_3 = 6$, what is the value of $r_1 + r_2 + r_3 - r =$ (R - Radius of the circum circle)

(A) $4R$
(B) $3R$
(C) $2R$
(D) R

Answer: (A) $4R$ · The council's preliminary key

Q584 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

In triangle ABC, $\frac{a+b+c}{BC+AB} + \frac{a+b+c}{AC+AB} = 3$ then $\tan\frac{C}{8} =$

(A) $\sqrt{6}+\sqrt{3}+\sqrt{2}-2$
(B) $\sqrt{6}-\sqrt{3}-\sqrt{2}+2$
(C) $\sqrt{6}-\sqrt{3}+\sqrt{2}-2$
(D) $\sqrt{6}+\sqrt{3}-\sqrt{2}+2$

Answer: (C) $\sqrt{6}-\sqrt{3}+\sqrt{2}-2$ · The council's preliminary key

Q585 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

If $\cot A = \frac{11}{60}$, $\cos B = \frac{7}{25}$ and neither A nor B is in the first quadrant, then $\left(A + \frac{B}{2}\right)$ lies in the quadrant

(A) I
(B) II
(C) III
(D) IV

Answer: (A) I · The council's preliminary key

Q586 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

In a Δ ABC, if $\cos A + \cos B + \cos C = a + b\sin\frac{A}{2}\cdot\sin\frac{B}{2}\cdot\sin\frac{C}{2}$, then $a + b =$

(A) 3
(B) 0
(C) 1
(D) 5

Answer: (D) 5 · The council's preliminary key

Q587 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

$\sqrt{3}\operatorname{cosec} 20^\circ - \sec 20^\circ =$

(A) 1
(B) 2
(C) 3
(D) 4

Answer: (D) 4 · The council's preliminary key

Q588 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

The common solution set of the equations $2\sin^2 x + \sin^2 2x = 2$ and $\sin 2x + \cos 2x = \tan x$ is

(A) $\left\{x \in \mathbb{R} / x = (2n+1)\frac{\pi}{4}, n \in \mathbb{Z}\right\}$
(B) $\left\{x \in \mathbb{R} / x = (3n+1)\frac{\pi}{4}, n \in \mathbb{Z}\right\}$
(C) $\left\{x \in \mathbb{R} / x = (4n+1)\frac{\pi}{8}, n \in \mathbb{Z}\right\}$
(D) $\left\{x \in \mathbb{R} / x = (4n-1)\frac{\pi}{8}, n \in \mathbb{Z}\right\}$

Answer: (A) $\left\{x \in \mathbb{R} / x = (2n+1)\frac{\pi}{4}, n \in \mathbb{Z}\right\}$ · The council's preliminary key

Q589 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

In a triangle ABC, if $a + c = 5b$ then $\cot\frac{A}{2}\cot\frac{C}{2} =$

(A) 2
(B) $\frac{1}{2}$
(C) $\frac{3}{2}$
(D) $\frac{2}{3}$

Answer: (C) $\frac{3}{2}$ · The council's preliminary key

Q590 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

In a Δ ABC, if $a\cos^2\frac{C}{2} + c\cos^2\frac{A}{2} = \frac{3b}{2}$, then

(A) $2b = a + c$

(B) $b^2 = ac$

(C) $b^2 = \dfrac{2ac}{a+c}$

(D) $a + b + c = 1$

Answer: (A) $2b = a + c$ · The council's preliminary key

Q591 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

In Δ ABC, if B + C = 72°, then $\left(1 + \dfrac{a}{c} + \dfrac{b}{c}\right)\left(1 + \dfrac{c}{b} - \dfrac{a}{b}\right) =$

(A) $2 + \sqrt{5}$

(B) $\dfrac{\sqrt{5}+1}{2\sqrt{2}}$

(C) $\dfrac{\sqrt{5}-2}{4}$

(D) $\dfrac{5-\sqrt{5}}{2}$

Answer: (D) $\dfrac{5-\sqrt{5}}{2}$ · The council's preliminary key

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Q592 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

In a Δ ABC, r_1, r_2, r_3 respectively denote the radius of excircles opposite to the vertices A, B, C and r denote the radius of the incircle. If p_1, p_2, p_3 respectively are the altitudes of the triangle from the vertices A, B, C then $\left(\dfrac{1}{p_1} + \dfrac{1}{p_2} + \dfrac{1}{p_3}\right)^2 =$

(A) $\left(\dfrac{1}{r_1} + \dfrac{1}{r_2} + \dfrac{1}{r_3}\right)^2 r^2$

(B) $\dfrac{1}{r}\left(\dfrac{1}{r_1} + \dfrac{1}{r_2} + \dfrac{1}{r_3}\right)$

(C) $\left(\dfrac{r}{r_1} + \dfrac{r}{r_2} + \dfrac{r}{r_3}\right)^2$

(D) $rr_1 + rr_2 + rr_3$

Answer: (B) $\dfrac{1}{r}\left(\dfrac{1}{r_1} + \dfrac{1}{r_2} + \dfrac{1}{r_3}\right)$ · The council's preliminary key

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Q593 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

$\sin 20^\circ \cdot \sin 40^\circ \cdot \sin 60^\circ \cdot \sin 80^\circ =$

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(A) $\frac{-3}{16}$
(B) $\frac{5}{16}$
(C) $\frac{3}{16}$
(D) $\frac{-5}{16}$

Answer: (C) $\frac{3}{16}$ · The council's preliminary key

Q594 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

$\cos\frac{2\pi}{7}+\cos\frac{4\pi}{7}+\cos\frac{6\pi}{7}+\cos\frac{7\pi}{7}=$

(A) $\frac{1}{2}$
(B) 1
(C) $\frac{-1}{2}$
(D) $\frac{-3}{2}$

Answer: (D) $\frac{-3}{2}$ · The council's preliminary key

Q595 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

If A is not an integral multiple of $\frac{\pi}{2}$, then $\operatorname{cosec}2A+\cot 2A=$

(A) $\tan A$
(B) $\cot A+2\cot 2A$
(C) $\tan A+2\cot 2A$
(D) $\tan 2A$

Answer: (C) $\tan A+2\cot 2A$ · The council's preliminary key

Q596 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

$\cos^4\frac{\pi}{8}+\cos^4\frac{2\pi}{8}+\cos^4\frac{3\pi}{8}+\cos^4\frac{4\pi}{8}+\cos^4\frac{5\pi}{8}+\cos^4\frac{6\pi}{8}+\cos^4\frac{7\pi}{8}+\cos^4\frac{8\pi}{8}=$

(A) 3
(B) -1
(C) 1
(D) 4

Answer: (A) 3 · The council's preliminary key

Q597 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

The number of solutions of the equation $\cos 6x+\cos 4x+\cos 2x=-1$ in $[0,\pi]$ is

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(A) 4
(B) 3
(C) 6
(D) 5

Answer: (D) 5 · The council's preliminary key

Q598 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

In ΔABC, if $\frac{1}{a+b}+\frac{1}{c+a}=\frac{3}{a+b+c}$, then $\sin A=$

(A) 1
(B) $\frac{1}{2}$
(C) $\frac{\sqrt{3}}{2}$
(D) $\frac{4}{5}$

Answer: (C) $\frac{\sqrt{3}}{2}$ · The council's preliminary key

Q599 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

If the angles of a triangle ABC are in A.P, then

(A) $c^2=a^2+b^2-ab$
(B) $a^2=b^2+c^2-ac$
(C) $b^2=a^2+c^2-ac$
(D) $b^2=a^2+c^2$

Answer: (C) $b^2=a^2+c^2-ac$ · The council's preliminary key

Q600 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

In any ΔABC, $\frac{1+\cos(A-B)\cdot\cos C}{1+\cos(A-C)\cdot\cos B}=$

(A) $\frac{a^2+c^2}{b^2+c^2}$
(B) $\frac{b^2+c^2}{b^2+a^2}$
(C) $\frac{a^2+c^2}{a^2+b^2}$
(D) $\frac{a^2+b^2}{a^2+c^2}$

Answer: (D) $\frac{a^2+b^2}{a^2+c^2}$ · The council's preliminary key

Q601 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

In any ΔABC, $\frac{b-c\cos A}{c-b\cos A}=$

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(A) $\frac{\sin B}{\sin C}$
(B) $\frac{\cos C}{\cos B}$
(C) $\frac{\cos B}{\cos C}$
(D) $\frac{\sin C}{\sin B}$

Answer: (B) $\frac{\cos C}{\cos B}$ · The council's preliminary key

Q602 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

$2(\sin^6\theta + \cos^6\theta) - 3(\sin^4\theta + \cos^4\theta) =$

(A) -1
(B) 1
(C) 0
(D) 12

Answer: (A) -1 · The council's preliminary key

Q603 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

$\left(\frac{\sin 35^\circ}{\cos 55^\circ}\right)^2 + \left(\frac{\cos 55^\circ}{\sin 35^\circ}\right)^2 - 2\cos 30^\circ =$

(A) $2+\sqrt{3}$
(B) $2-\sqrt{3}$
(C) $2\sqrt{3}$
(D) $3\sqrt{2}$

Answer: (B) $2-\sqrt{3}$ · The council's preliminary key

Q604 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

If $\cos\theta = \frac{-3}{5}$ and $\pi < \theta < 3\pi/2$, then $\tan\left(\frac{\theta}{2}\right) =$

(A) 2
(B) -2
(C) 1
(D) -1

Answer: (B) -2 · The council's preliminary key

Q605 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

$\frac{1-\tan^2 15^\circ}{1+\tan^2 15^\circ} =$

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(A) 1
(B) $\sqrt{3}$
(C) $\frac{\sqrt{3}}{2}$
(D) 2

Answer: (C) $\frac{\sqrt{3}}{2}$ · The council's preliminary key

Q606 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

If $6\cos 2\theta + 2\cos^2\left(\frac{\theta}{2}\right) + 2\sin^2\theta = 0$, $-\pi < \theta < \pi$, then $\theta =$

(A) $\frac{\pi}{3}$
(B) $\frac{\pi}{3}, \text{Cos}^{-1}\left(\frac{3}{5}\right)$
(C) $\text{Cos}^{-1}\left(\frac{3}{5}\right)$
(D) $\pm\frac{\pi}{3}, \pm\left(\pi - \text{Cos}^{-1}\frac{3}{5}\right)$

Answer: (D) $\pm\frac{\pi}{3}, \pm\left(\pi - \text{Cos}^{-1}\frac{3}{5}\right)$ · The council's preliminary key

Q607 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

In a Δ ABC, if $4a = b + c$, then $\tan\frac{B}{2}\tan\frac{C}{2} =$

(A) $\frac{1}{3}$
(B) $\frac{3}{5}$
(C) $\frac{2}{3}$
(D) $\frac{1}{2}$

Answer: (B) $\frac{3}{5}$ · The council's preliminary key

Q608 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

If 4 times the area of a ΔABC is $c^2 - (a-b)^2$, then $\sin C$

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(A) $\frac{\sqrt{3}}{2}$
(B) $\frac{1}{\sqrt{2}}$
(C) $\frac{1}{2}$
(D) 1

Answer: (D) 1 · The council's preliminary key

Q609 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

In a triangle ABC, if $\cot\frac{A}{2}\cot\frac{B}{2}=K$, then all the possible values of K lies in

(A) $(0,1]$
(B) $[1,\infty)$
(C) $(1,\infty)$
(D) $(0,1)$

Answer: (C) $(1,\infty)$ · The council's preliminary key

Q610 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

In a triangle ABC, $b^2\sin 2C+c^2\sin 2B=$

(A) 0
(B) 4Δ
(C) 2Δ
(D) Δ

Answer: (B) 4Δ · The council's preliminary key

Q611 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

$\cos\frac{7\pi}{8}+\cos\frac{\pi}{4}+\cos\left(\frac{-\pi}{8}\right)-1=$

(A) $4\cos\frac{\pi}{16}\cos\frac{3\pi}{4}\cos\frac{5\pi}{8}$
(B) $4\cos\frac{\pi}{16}\cos\frac{\pi}{8}\sin\frac{5\pi}{8}$
(C) $4\cos\frac{\pi}{16}\cos\frac{3\pi}{8}\cos\frac{9\pi}{16}$
(D) $-4\cos\frac{\pi}{16}\cos\frac{5\pi}{8}\cos\frac{\pi}{16}$

Answer: (C) $4\cos\frac{\pi}{16}\cos\frac{3\pi}{8}\cos\frac{9\pi}{16}$ · The council's preliminary key

Q612 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

If $\frac{2\sin\alpha}{1+\cos\alpha+\sin\alpha}=x$, then $\frac{1-\cos\alpha-\sin\alpha}{\cos\alpha}=$

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(A) $\frac{1}{x}$

(B) $-x$

(C) $1-x$

(D) $1+x$

Answer: (B) $-x$ · The council's preliminary key

Q613 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

$\frac{\cot^2 15^\circ - 1}{\cot^2 15^\circ + 1} =$

(A) $\frac{1}{2}$

(B) $\frac{\sqrt{3}}{2}$

(C) $\frac{3\sqrt{3}}{4}$

(D) $\frac{\sqrt{3}}{4}$

Answer: (B) $\frac{\sqrt{3}}{2}$ · The council's preliminary key

Q614 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

If $A+B+C=4S$, then $\cos(2S-A)+\cos(2S-B)-\cos(2S-C)-\cos 2S =$

(A) $4\cos\frac{A}{2}\cos\frac{B}{2}\cos\frac{C}{2}$

(B) $4\cos\frac{A}{2}\sin\frac{B}{2}\sin\frac{C}{2}$

(C) $4\sin\frac{A}{2}\cos\frac{B}{2}\sin\frac{C}{2}$

(D) $4\sin\frac{A}{2}\sin\frac{B}{2}\cos\frac{C}{2}$

Answer: (D) $4\sin\frac{A}{2}\sin\frac{B}{2}\cos\frac{C}{2}$ · The council's preliminary key

Q615 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

The number of values of x satisfying $\sin 4x = \cos 3x$ and $\frac{-\pi}{6} < x < \frac{\pi}{2}$, is

(A) 0

(B) 1

(C) 2

(D) 3

Answer: (C) 2 · The council's preliminary key

Q616 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

In a ΔABC, if $\angle C = 90^\circ$, $\frac{a^2+b^2}{a^2-b^2}\sin(A-B)=1$ and $0<B<45^\circ$, then

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(A) $a > b > c$

(B) $c > a > b$

(C) $c > b > a$

(D) $a < b < c$

Answer: (B) $c > a > b$ · The council's preliminary key

Q617 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

In a triangle ABC, if $rr_2 = r_1r_3$, then $\cos 2B =$

(A) -1

(B) 1

(C) 0

(D) $\frac{1}{2}$

Answer: (A) -1 · The council's preliminary key

Q618 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

If the sides of a triangle are 3, 4 and 5 then the circumradius of the triangle is

(A) 2

(B) $\frac{3}{2}$

(C) $\frac{5}{2}$

(D) $\frac{7}{2}$

Answer: (C) $\frac{5}{2}$ · The council's preliminary key

Q619 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

In a ΔABC, $\frac{\cos^2\left(\frac{B-C}{2}\right)}{(b+c)^2} + \frac{\sin^2\left(\frac{B-C}{2}\right)}{(b-c)^2} =$

(A) $1/a^2$

(B) $2/a^2$

(C) $3/a^2$

(D) $4/a^2$

Answer: (A) $1/a^2$ · The council's preliminary key

Q620 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

$\cot\frac{\pi}{16} \cdot \cot\frac{2\pi}{16} \cdot \cot\frac{3\pi}{16} \cdot \cot\frac{4\pi}{16} \cdot \cot\frac{5\pi}{16} \cdot \cot\frac{6\pi}{16} \cdot \cot\frac{7\pi}{16} =$

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(A) 0
(B) 1
(C) $\frac{1}{2}$
(D) 2

Answer: (B) 1 · The council's preliminary key

Q621 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

Let ACB be a triangle with right-angle at C. Let AB = 29 units, BC = 21 units and $\angle ABC = \theta$. Then $\cos^2\theta - \sin^2\theta =$

(A) 1
(B) $\frac{41}{841}$
(C) $\frac{40}{441}$
(D) $\frac{41}{800}$

Answer: (B) $\frac{41}{841}$ · The council's preliminary key

Q622 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

$\frac{1-\cos 2\theta+\sin 2\theta}{1+\cos 2\theta+\sin 2\theta} =$

(A) $\cot\theta$
(B) $\cos 2\theta$
(C) $\tan\theta$
(D) $\tan 2\theta$

Answer: (C) $\tan\theta$ · The council's preliminary key

Q623 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

Let $y = 4\sin^2\theta - \cos 2\theta$. If l and m are the minimum and maximum values of y respectively, then

(A) $lm = \frac{m}{l}$
(B) $lm = \frac{l}{m}$
(C) $l + m = \frac{l}{m}$
(D) $\frac{lm}{l-m} = l + m$

Answer: (A) $lm = \frac{m}{l}$ · The council's preliminary key

Q624 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

If $\cos\theta = -\frac{1}{\sqrt{2}}$ and $\tan\theta = 1$, then the general value of θ is

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(A) $2n\pi + \frac{\pi}{4},\ n = 0, 1, 2, 3 \ldots \ldots$
(B) $(2n+1)\pi + \frac{\pi}{4},\ n = 0, 1, 2, 3 \ldots \ldots$
(C) $n\pi + \frac{\pi}{4},\ n = 0, 1, 2, 3 \ldots \ldots$
(D) $n\pi \pm \frac{\pi}{4},\ n = 0, 1, 2, 3 \ldots \ldots$

Answer: (B) $(2n+1)\pi + \frac{\pi}{4},\ n = 0, 1, 2, 3 \ldots \ldots$ · The council's preliminary key

Q625 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

In $\triangle ABC$, $\angle B = \frac{\pi}{4}$, $\angle C = \frac{\pi}{3}$. If the area of the triangle is $54 + 18\sqrt{3}$ sq. units, then $a =$

(A) $\sqrt{3} + 1$
(B) $2(\sqrt{3} + 1)$
(C) $4(\sqrt{3} + 1)$
(D) $6(\sqrt{3} + 1)$

Answer: (D) $6(\sqrt{3} + 1)$ · The council's preliminary key

Q626 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

If a, b, c are the sides of a $\triangle ABC$ and exradii r_1, r_2, r_3 are respectively 12, 6, 4 then $a + 2b + 3c =$

(A) 24
(B) 44
(C) 30
(D) 54

Answer: (B) 44 · The council's preliminary key

Q627 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

In a triangle ABC, if $a : b : c = 4 : 5 : 6$, then $\frac{1}{4R}[r_1 + r_2 + r_3] =$

(A) $\frac{71}{64}$
(B) $\frac{4}{5}$
(C) $\frac{81}{84}$
(D) $\frac{7}{9}$

Answer: (A) $\frac{71}{64}$ · The council's preliminary key

Q628 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

In a triangle ABC, with usual notation, if $a = 12$, $b = 16$, $c = 20$, then the ratio of the exradii of the triangle opposite to the angles in the order $\angle C, \angle B, \angle A$ is

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(A) $3 : 4 : 5$
(B) $6 : 3 : 2$
(C) $12 : 7 : 5$
(D) $2 : 3 : 5$

Answer: (B) $6 : 3 : 2$ · The council's preliminary key

Q629 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

The value of $(1 - \cos\theta)(1 + \cos\theta)(1 + \cot^2\theta)$ when $\theta = \frac{\pi}{15}$ is

(A) 1
(B) $\frac{1}{2}$
(C) $\frac{-1}{\sqrt{3}}$
(D) 2

Answer: (A) 1 · The council's preliminary key

Q630 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

If $x \neq -y$ and $\sin x + \sin y = 3(\cos y - \cos x)$, then $\tan(x - y) =$

(A) $\frac{\sqrt{3}}{2}$
(B) -1
(C) $\frac{3}{4}$
(D) 1

Answer: (C) $\frac{3}{4}$ · The council's preliminary key

Q631 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

If $\frac{\sin(x+y)}{\sin(x-y)} = \frac{a+b}{a-b}$, then $\frac{\tan x}{\tan y} =$

(A) $\frac{b}{a}$
(B) $\frac{a}{b}$
(C) ab
(D) a^b

Answer: (B) $\frac{a}{b}$ · The council's preliminary key

Q632 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

If $90^\circ < A < 180^\circ$ and $\sin A = \frac{4}{5}$, then $\tan\frac{A}{2} =$

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(A) $\frac{1}{2}$
(B) $\frac{3}{5}$
(C) $\frac{3}{2}$
(D) 2

Answer: (D) 2 · The council's preliminary key

Q633 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

The number of solutions of the equation $\tan\theta + \cot 2\theta = 1$ lying in the interval $(-\pi, \pi)$ is

(A) 1
(B) 2
(C) 3
(D) 4

Answer: (B) 2 · The council's preliminary key

Q634 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

In a triangle, if the length of the sides $a,\ b$ and c are three consecutive natural numbers and $a < b < c$, then $(\cos A + \cos B + \cos C)\, 2abc =$

(A) $3b(b^2 - 2)$
(B) $3b^3 + 6b^2 + 3b$
(C) $(3b + 2)(3b - 2)b$
(D) $(b - 1)b(b + 1)$

Answer: (A) $3b(b^2 - 2)$ · The council's preliminary key

Q635 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

A triangle ABC has area of P square units and circumference $2S$ units. If $h_1,\ h_2$ and h_3 are respectively the length of the altitudes of the triangle drawn from the vertices A, B and C, then $P^2\left[\frac{(h_1h_2 + h_2h_3 + h_3h_1)^2}{h_1^2h_2^2h_3^2} - \frac{2(h_1 + h_2 + h_3)}{h_1h_2h_3}\right] =$

(A) $S^2 - \left(\frac{ab + bc + ca}{2}\right)$
(B) $\frac{\cot^2 A + \cot^2 B + \cot^2 C}{2}$
(C) $\frac{a + b + c}{4S}$
(D) $S^2 - \left((ab)^2 + (bc)^2 + (ca)^2\right)$

Answer: (A) $S^2 - \left(\frac{ab + bc + ca}{2}\right)$ · Checked by our team

Q636 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

In a ΔABC, if $(a-b)(s-c)=(b-c)(s-a)$ then r_1, r_2 and r_3 are

(A) in arithmetic progression
(B) in geometric progression
(C) in harmonic progression
(D) equal

Answer: (A) in arithmetic progression · The council's preliminary key

Q637 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

In an equilateral triangle ABC, $r : R : r_1$ is

(A) $1:3:2$
(B) $1:3:1$
(C) $1:2:3$
(D) $2:1:3$

Answer: (C) $1:2:3$ · The council's preliminary key

Q638 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

In ΔABC, if $a=13$ cm, $b=14$ cm and $c=15$ cm then its circumradius, $R=$

(A) $\frac{8}{65}$ cm
(B) $\frac{7}{65}$ cm
(C) $\frac{65}{7}$ cm
(D) $\frac{65}{8}$ cm

Answer: (D) $\frac{65}{8}$ cm · The council's preliminary key

Q639 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

$$\frac{\tan 52^\circ - \tan 38^\circ}{\tan 14^\circ} =$$

(A) 1
(B) 2
(C) $2\sqrt{3}$
(D) $\frac{2}{\sqrt{3}}$

Answer: (B) 2 · The council's preliminary key

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Q640 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

In a ΔABC, the sides a, b, c are in A.P. if and only if r_1, r_2, r_3 are in _____

(A) A.P.
(B) G.P.
(C) H.P.
(D) A.G.P

Answer: (C) H.P. · The council's preliminary key

Q641 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

$\cos^2\left(\frac{7\pi}{8}\right) + \cos^2\left(\frac{5\pi}{8}\right) + \cos^2\left(\frac{3\pi}{8}\right) + \cos^2\left(\frac{\pi}{8}\right) =$

(A) $\frac{3}{2}$
(B) $\frac{2}{3}$
(C) 2
(D) 1

Answer: (C) 2 · The council's preliminary key

Q642 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

$\tan\left(\frac{3\pi}{16}\right) + \cot\left(\frac{3\pi}{16}\right) =$

(A) $\sqrt{\sqrt{2}-1}$
(B) $2\sqrt{\sqrt{2}-1}$
(C) $2^{3/4}\sqrt{\sqrt{2}-1}$
(D) $2^{7/4}\sqrt{\sqrt{2}-1}$

Answer: (D) $2^{7/4}\sqrt{\sqrt{2}-1}$ · The council's preliminary key

Q643 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

Find the value of θ, if $|\tan\theta| = \tan\theta + \frac{1}{\cos\theta}$ and $\theta \in [0, 2\pi] - \left\{\pm\frac{\pi}{2}\right\}$

(A) $\frac{11\pi}{3}$
(B) $\frac{11\pi}{6}$
(C) $\frac{13\pi}{3}$
(D) $\frac{13\pi}{6}$

Answer: (B) $\frac{11\pi}{6}$ · The council's preliminary key

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Q644 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

If $\cos(\theta_1)+\cos(\theta_2)+\cos(\theta_3)+\cos(\theta_4)=-4$, then the value of $\cot\left(\frac{\theta_1}{2}\right)+\cot\left(\frac{\theta_2}{2}\right)+\cot\left(\frac{\theta_3}{2}\right)+\cot\left(\frac{\theta_4}{2}\right)=$

(A) 4
(B) 1
(C) 2
(D) 0

Answer: (D) 0 · The council's preliminary key

Q645 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

Find the general solution of $3\sin^4(\theta)+\cos^4(\theta)=1$

(A) $n\pi$ only
(B) $n\pi+\frac{\pi}{4}$ only
(C) $n\pi-\frac{\pi}{4}$ only
(D) $n\pi$, $n\pi+\frac{\pi}{4}$ and $n\pi-\frac{\pi}{4}$

Answer: (D) $n\pi$, $n\pi+\frac{\pi}{4}$ and $n\pi-\frac{\pi}{4}$ · The council's preliminary key

Q646 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

If the lengths of the sides of a triangle are 15, 20, 25 units. Find the circumradius of the triangle.

(A) 30 units
(B) 7.5 units
(C) 12.5 units
(D) 20 units

Answer: (C) 12.5 units · The council's preliminary key

Q647 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

If $\operatorname{cosec}\theta+\cot\theta=\frac{1}{3}$, then θ lies in the

(A) 1st quadrant
(B) 2nd quadrant
(C) 3rd quadrant
(D) 4th quadrant

Answer: (B) 2nd quadrant · The council's preliminary key

Q648 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

Let a, b and c be the lengths of the sides of a triangle with its opposite angles A, B and C respectively. If $a=3$, $b=4$ and $A=\text{Sin}^{-1}\left(\frac{3}{4}\right)$, then the angle B is

(A) 30°
(B) 45°
(C) 90°
(D) 60°

Answer: (C) 90° · The council's preliminary key

Q649 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

In ΔABC, $\angle A = 30^\circ + \angle C$ and $R - (\sqrt{3}+1)r = 0$ where r is the inradius and R is the circumradius, then _____

(A) ABC is a right-angled triangle
(B) ABC is an equilateral triangle
(C) ABC is acute angled
(D) $\angle A = 75^\circ\ \angle B = 60^\circ\ \angle C = 45^\circ$

Answer: (A) ABC **is a right-angled triangle** · The council's preliminary key

Q650 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

If 2 is the length of a side of a triangle with its opposite angle '$\pi/3$', then the circumradius of the triangle is _____

(A) $\frac{2}{\sqrt{3}}$
(B) $\frac{4}{\sqrt{3}}$
(C) 2
(D) 4

Answer: (A) $\frac{2}{\sqrt{3}}$ · The council's preliminary key

Q651 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

If $\tan(x/2) = \frac{m}{n}$, then the value of $m\sin(x) + n\cos(x)$ is equal to

(A) m
(B) $-m$
(C) $-n$
(D) n

Answer: (D) n · The council's preliminary key

Q652 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

In ΔPQR, find $\sum(q+r)\cos P$, if p, q, r denote its sides and $s = \frac{p+q+r}{2}$

(A) s
(B) $\frac{s}{2}$
(C) $2s$
(D) $4s$

Answer: (C) $2s$ · The council's preliminary key

Q653 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

If $\frac{x}{\cos\alpha} = \frac{y}{\cos\left(\frac{2\pi}{3}-\alpha\right)} = \frac{z}{\cos\left(\frac{2\pi}{3}+\alpha\right)}$ then the value of $(x+y+z)$ is equal to

(A) $\frac{1}{2}$
(B) 0
(C) 1
(D) 2

Answer: (B) 0 · The council's preliminary key

Q654 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

In a ΔABC, if a, b, c are its sides and $\angle C = 60^\circ$, find the value of $\frac{a}{b+c} + \frac{b}{c+a}$

(A) 1
(B) 0
(C) $\frac{\sqrt{3}}{2}$
(D) $\frac{1}{2}$

Answer: (A) 1 · The council's preliminary key

Q655 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

If $\sin A + \sin B = \frac{1}{2}$ and $\cos A + \cos B = 1$, then $\sin\left(\frac{A-B}{2}\right)$ equals

(A) $\pm\frac{\sqrt{13}}{4}$
(B) $\pm\frac{\sqrt{11}}{4}$
(C) $\pm\frac{\sqrt{7}}{4}$
(D) $\pm\frac{\sqrt{17}}{4}$

Answer: (B) $\pm\frac{\sqrt{11}}{4}$ · The council's preliminary key

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Q656 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

If $\sin(2x) = \frac{\sqrt{5}-1}{4}$ then $x = \frac{n}{2}\pi + (-1)^n(m),\ n \in \mathbf{Z}$, find m.

(A) $\frac{\pi}{10}$
(B) $\frac{\pi}{5}$
(C) $\frac{\pi}{20}$
(D) $\frac{\pi}{40}$

Answer: (C) $\frac{\pi}{20}$ · The council's preliminary key

Q657 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

For the value of $\frac{2\tan(x)}{1-\tan^2(x)}$ to be positive, find values of x, such that $x \in \left(0, \frac{\pi}{2}\right)$

(A) $\left(0, \frac{\pi}{3}\right)$
(B) $\left(0, \frac{\pi}{6}\right)$
(C) $\left(0, \frac{\pi}{4}\right)$
(D) $\left(0, \frac{\pi}{8}\right)$

Answer: (C) $\left(0, \frac{\pi}{4}\right)$ · The council's preliminary key

Q658 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

The angles A, B, C of a triangle ABC are in AP. If $AB = 6$, $BC = 7$ then $AC =$

(A) $\sqrt{40}$
(B) $\sqrt{41}$
(C) $\sqrt{43}$
(D) 6

Answer: (C) $\sqrt{43}$ · The council's preliminary key

Q659 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

The minimum and maximum values of $\cos\left(x + \frac{\pi}{3}\right) + 2\sqrt{2}\sin\left(x + \frac{\pi}{3}\right)$ are respectively

(A) $-(2\sqrt{3}-1)$ & $2\sqrt{3}-1$
(B) $-(1+2\sqrt{2})$ & $1+2\sqrt{2}$
(C) -3 & 3
(D) -2 & 2

Answer: (C) -3 & 3 · The council's preliminary key

Q660 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

If $\sec\theta + \tan\theta = \frac{2}{3}$, then in which quadrant does θ lie in?

(A) I
(B) II
(C) III
(D) IV

Answer: (D) IV · The council's preliminary key

Q661 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

$\sin\left(\frac{5\pi}{3}\right) + \sec\left(\frac{13\pi}{3}\right) =$

(A) $2 - \frac{\sqrt{3}}{2}$
(B) $2 + \frac{\sqrt{3}}{2}$
(C) $\sqrt{3} + \frac{1}{\sqrt{2}}$
(D) $\sqrt{3} - \frac{1}{\sqrt{2}}$

Answer: (A) $2 - \frac{\sqrt{3}}{2}$ · The council's preliminary key

Q662 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

If $x \neq 0$, then $\frac{\sin(\pi+x)\cos\left(\frac{\pi}{2}+x\right)\tan\left(\frac{3\pi}{2}-x\right)\cot(2\pi-x)}{\sin(2\pi-x)\cos(2\pi+x)\operatorname{cosec}(-x)\sin\left(\frac{3\pi}{2}+x\right)} =$

(A) 0
(B) -1
(C) 1
(D) 2

Answer: (C) 1 · The council's preliminary key

Q663 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

For a right-angled triangle having the lengths of two sides as $2\sqrt{2}$ and 5, find the length of the third side.

(A) $4\sqrt{2}$
(B) $\sqrt{15}$
(C) $\sqrt{17}$
(D) $\sqrt{13}$

Answer: (C) $\sqrt{17}$ · The council's preliminary key

Q664 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

$\tan\left(-\frac{23\pi}{3}\right) - \cot\left(\theta - \frac{13\pi}{3}\right) =$

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(A) $\sqrt{3}+\cot\theta$
(B) $\sqrt{3}-\tan\left(\frac{\pi}{6}+\theta\right)$
(C) $\sqrt{3}+\tan\theta$
(D) $\sqrt{3}+\cot\left(\frac{\pi}{3}-\theta\right)$

Answer: (D) $\sqrt{3}+\cot\left(\frac{\pi}{3}-\theta\right)$ · The council's preliminary key

Q665 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

If r = inradius, Δ = Area of ΔABC, s = semi-perimeter then which of the following is true?

(A) $\Delta = r+s$
(B) $\Delta = \frac{r}{s}$
(C) $\Delta = (rs)^2$
(D) $\Delta = rs$

Answer: (D) $\Delta = rs$ · The council's preliminary key

Q666 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

The possible value of $\sin^6(\theta)+\cos^6(\theta)-3\cos^4(\theta)$ is

(A) 2
(B) -2
(C) -3
(D) 3

Answer: (B) -2 · The council's preliminary key

Q667 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

Solve $\tan(x)+\sec(x)=\sqrt{3},\ x\in[0,2\pi]$

(A) $\frac{\pi}{3}$
(B) $\frac{\pi}{6}$
(C) $\frac{13\pi}{6}$
(D) $\frac{6\pi}{13}$

Answer: (B) $\frac{\pi}{6}$ · The council's preliminary key

Q668 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

If $\cos(x)+\cos^2(x)=1$, then $\sin^2(x)+\sin^4(x)$ is equal to

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(A) 0
(B) 1
(C) -1
(D) 2

Answer: (B) 1 · The council's preliminary key

Q669 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

In a ΔABC, $a = 1$, $b = \sqrt{3}$ and $\angle C = \pi/6$. Then the measure of the third side $c =$

(A) 4
(B) 3
(C) 1
(D) 2

Answer: (C) 1 · The council's preliminary key

Q670 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

If θ lies in third quadrant and $\cos\theta = \frac{-3}{5}$ find value of $\tan\theta$.

(A) $\frac{2}{3}$
(B) $\frac{-2}{3}$
(C) $\frac{-4}{3}$
(D) $\frac{4}{3}$

Answer: (D) $\frac{4}{3}$ · The council's preliminary key

Q671 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

In ΔABC, the circle that touches the sides BC internally and other two sides AB and AC externally, is called _____

(A) Ex circle opposite to angle A
(B) Inscribed circle opposite to angle A
(C) Circumcircle of the triangle
(D) No such circle exists

Answer: (A) Ex circle opposite to angle A · The council's preliminary key

Q672 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

A triangle can be uniquely determined by its _____

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(A) Three angles
(B) Three sides
(C) One of the angles and one of the sides
(D) Only one side

Answer: (B) Three sides · The council's preliminary key

Q673 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

Find the value of $\operatorname{cosec} 750^\circ - 2(\cot 765^\circ)$

(A) 0
(B) 1
(C) 2
(D) -1

Answer: (A) 0 · The council's preliminary key

Q674 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

In triangle ABC, $\frac{\tan A}{2} = \frac{\tan B}{3} = \frac{\tan C}{4}$ then the value of $\sec^2 A + \sec^2 B + \sec^2 C =$

(A) $\frac{101}{8}$
(B) $\frac{111}{8}$
(C) $\frac{121}{8}$
(D) $\frac{91}{8}$

Answer: (B) $\frac{111}{8}$ · The council's preliminary key

Q675 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

In a $\triangle ABC$, $\angle C = 60^\circ$ and $\angle A = 75^\circ$. If D is a point on AC such that the area of $\triangle BAD$ is $\sqrt{3}$ times the area of $\triangle BCD$, then the measure of $\angle ABD$ is

(A) 30°
(B) 45°
(C) 60°
(D) 90°

Answer: (A) 30° · The council's preliminary key

Q676 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

The value of x in $\left(0, \frac{\pi}{2}\right)$ satisfying the equation $(\sin x)(\cos x) = \frac{1}{4}$ is

(A) $\frac{\pi}{6}$
(B) $\frac{\pi}{3}$
(C) $\frac{\pi}{8}$
(D) $\frac{\pi}{12}$

Answer: (D) $\frac{\pi}{12}$ · The council's preliminary key

Q677 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

In a $\triangle ABC$, $b : c = \sqrt{3} : \sqrt{2}$ and the angles A, B, C are in A.P, then $\angle A =$

(A) 45°
(B) 65°
(C) 55°
(D) 75°

Answer: (D) 75° · The council's preliminary key

Q678 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

$$\frac{1-\cos(2x)+\sin(x)}{\sin(2x)+\cos(x)} =$$

(A) $\sin(x)$
(B) $\cos(x)$
(C) $\tan(x)$
(D) $\operatorname{cosec}(x)$

Answer: (C) $\tan(x)$ · The council's preliminary key

Q679 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

If $4\cos x + 3\sin x = 5$, then find the value of $\tan x =$

(A) $\frac{3}{4}$
(B) $\frac{4}{3}$
(C) $\frac{-3}{4}$
(D) $\frac{-4}{3}$

Answer: (A) $\frac{3}{4}$ · The council's preliminary key

Q680 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

For A, B and C, if $A + B + C = 0$, then $\sin(2A) + \sin(2B) + \sin(2C)$ is equal to

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(A) $4\sin(A)\cdot\sin(B)\cdot\sin(C)$
(B) $2\sin(A)\cdot\sin(B)\cdot\sin(C)$
(C) $-4\sin(A)\cdot\sin(B)\cdot\sin(C)$
(D) $-2\sin(A)\cdot\sin(B)\cdot\sin(C)$

Answer: (C) $-4\sin(A)\cdot\sin(B)\cdot\sin(C)$ · The council's preliminary key

Q681 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

The value of $(\sin 210^\circ)(\sin 585^\circ)$ is

(A) $\frac{1}{2\sqrt{2}}$
(B) $\frac{-1}{2\sqrt{2}}$
(C) $\frac{1}{\sqrt{3}}$
(D) $\frac{-1}{\sqrt{3}}$

Answer: (A) $\frac{1}{2\sqrt{2}}$ · The council's preliminary key

Q682 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

General solution of $4\sin^2(x)-4\sin(x)+1=0$ is

(A) $x=2n\pi\pm\frac{\pi}{3}, n\in Z$
(B) $x=n\pi+(-1)^n\frac{\pi}{3}, n\in Z$
(C) $x=n\pi+(-1)^n\frac{\pi}{6}, n\in Z$
(D) $x=n\pi+(-1)^n\frac{\pi}{4}, n\in Z$

Answer: (C) $x=n\pi+(-1)^n\frac{\pi}{6}, n\in Z$ · The council's preliminary key

Q683 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

If $\sin\alpha=\sin\beta$ and $\cos\alpha=\cos\beta$ then $\alpha-\beta=$ _____ for some integer n

(A) $n\pi$
(B) $2n\pi+\frac{\pi}{2}$
(C) $2n\pi-\frac{\pi}{2}$
(D) $2n\pi$

Answer: (D) $2n\pi$ · The council's preliminary key

Q684 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

$\frac{\sqrt{3}\sin(\theta)+\cos(\theta)}{\sin\left(\theta+\frac{\pi}{6}\right)}=$

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(A) -2
(B) 1
(C) 2
(D) -1

Answer: (C) 2 · The council's preliminary key

Q685 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

Find the general solution of ' $\sin x + \sin 2x + \sin 3x = \cos x + \cos 2x + \cos 3x$ '

(A) $2n\pi + \frac{2\pi}{3},\ \frac{n\pi}{2} + \frac{\pi}{8}, n \in Z$
(B) $2n\pi - \frac{2\pi}{3},\ \frac{n\pi}{2} - \frac{\pi}{8}, n \in Z$
(C) $2n\pi + \frac{2\pi}{3},\ \frac{n\pi}{2} \pm \frac{\pi}{8}, n \in Z$
(D) $2n\pi \pm \frac{2\pi}{3},\ \frac{n\pi}{2} + \frac{\pi}{8}, n \in Z$

Answer: (D) $2n\pi \pm \frac{2\pi}{3},\ \frac{n\pi}{2} + \frac{\pi}{8}, n \in Z$ · The council's preliminary key

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Q686 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

Let A, B and C be three angles of a triangle ABC such that $\cos A + \cos B + \cos C = \frac{3}{2}$, then the triangle ABC is _____

(A) Equilateral
(B) Right angled
(C) Isosceles but not equilateral
(D) Scalene

Answer: (A) Equilateral · The council's preliminary key

Q687 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

The perimeter of ΔABC is 36 cm and its in-radius is 8 cm. Then the area of the triangle is

(A) $144\ \text{cm}^2$
(B) $124\ \text{cm}^2$
(C) $164\ \text{cm}^2$
(D) $104\ \text{cm}^2$

Answer: (A) $144\ \text{cm}^2$ · The council's preliminary key

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Q688 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

$\cos^2(x) + \cos^2\left(x + \frac{\pi}{3}\right) + \cos^2\left(x - \frac{\pi}{3}\right) =$

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(A) $\frac{3}{2}$
(B) $\frac{1}{2}$
(C) $\frac{-3}{2}$
(D) $\frac{-1}{2}$

Answer: (A) $\frac{3}{2}$ · The council's preliminary key

Q689 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

$\cos 48^\circ \cdot \cos 12^\circ =$

(A) $\frac{(3-\sqrt{5})}{8}$
(B) $\frac{(3+\sqrt{5})}{4}$
(C) $\frac{(3+\sqrt{5})}{2}$
(D) $\frac{(3+\sqrt{5})}{8}$

Answer: (D) $\frac{(3+\sqrt{5})}{8}$ · The council's preliminary key

Q690 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

If $\sin(\theta) + \operatorname{cosec}(\theta) = 2$, then $\sin^{2020}(\theta) + \operatorname{cosec}^{2020}(\theta) =$ _____

(A) 2^{2020}
(B) $2020 \cdot 2^{2019}$
(C) 2^{2019}
(D) 2

Answer: (D) 2 · The council's preliminary key

Q691 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

Let a, b and c be the lengths of the sides of a triangle with its opposite angles A, B and C respectively. If $\angle C = 60^\circ$, then the value of $\frac{c(a+b)+(a^2+b^2)}{(b+c)(c+a)}$ is

(A) $\frac{1}{2}$
(B) $\frac{\sqrt{3}}{2}$
(C) 1
(D) $\sqrt{3}$

Answer: (C) 1 · The council's preliminary key

Q692 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

The general solution of $\cos(x) - \sin(x) = 0$ is

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(A) $n\pi - \frac{\pi}{4},\ n \in \mathbb{Z}$
(B) $2n\pi + \frac{\pi}{4},\ n \in \mathbb{Z}$
(C) $n\pi + \frac{\pi}{4},\ n \in \mathbb{Z}$
(D) $2n\pi - \frac{\pi}{4},\ n \in \mathbb{Z}$

Answer: (C) $n\pi + \frac{\pi}{4},\ n \in \mathbb{Z}$ · The council's preliminary key

Q693 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

For a triangle with the sides of lengths 6, 5 and 9, the radius of the in circle is

(A) $\sqrt{3}$
(B) $\sqrt{2}$
(C) $\sqrt{5}$
(D) $\frac{\sqrt{3}}{\sqrt{2}}$

Answer: (B) $\sqrt{2}$ · The council's preliminary key

Q694 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

$\tan 9^\circ - \tan 27^\circ - \tan 63^\circ + \tan 81^\circ =$

(A) 1
(B) 2
(C) 3
(D) 4

Answer: (D) 4 · The council's preliminary key

Q695 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

If $\frac{1}{2}\left(\tan\left(\frac{\pi}{24}\right) + \cot\left(\frac{\pi}{24}\right)\right) = \sqrt{a^2+a} + \sqrt{a}$, then $a =$

(A) 3
(B) 2
(C) 1
(D) 4

Answer: (B) 2 · The council's preliminary key

Q696 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

If $\sec\theta = m$, $\tan\theta = n$, then $\frac{1}{m}\left[m + n + \frac{1}{m+n}\right] =$

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(A) 1
(B) 2
(C) -1
(D) 3

Answer: (B) 2 · The council's preliminary key

Q697 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

The smallest positive value of x (in degrees) for which $\tan(x+100^\circ) = \tan(x+50^\circ)\tan(x)\tan(x-50^\circ)$ is

(A) 15°
(B) $22\frac{1}{2}^\circ$
(C) 75°
(D) 30°

Answer: (D) 30° · Official TGCHE final key

Q698 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

For $n \in N$, if $f(n) = (\cos nx)(\sec x)^n$ and $g(n) = (\sin nx)(\sec x)^n$, then $f(2020) - f(2019) + (\tan x)\, g(2019) =$

(A) $\sin x$
(B) $\cos x$
(C) 0
(D) 1

Answer: (C) 0 · Official TGCHE final key

Q699 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

θ and α lie in Q_3. If $\cos(\theta-\alpha)$, $\cos\theta$, $\cos(\theta+\alpha)$ are in harmonic progression, then $\cos\theta \sec\frac{\alpha}{2} =$

(A) $-\sqrt{2}$
(B) $\sqrt{2}$
(C) $-\sqrt{3}$
(D) $\sqrt{3}$

Answer: (B) $\sqrt{2}$ · Official TGCHE final key

Q700 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

If the possible solutions of the equation $2\cos^2 x + 3\sin x - 3 = 0$ constitute two unequal angles of a triangle, then the third angle of that triangle is

(A) $\frac{\pi}{2}$
(B) $\frac{\pi}{3}$
(C) $\frac{\pi}{6}$
(D) $\frac{\pi}{4}$

Answer: (B) $\frac{\pi}{3}$ · Official TGCHE final key

Q701 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

In ΔABC if $\angle C = \frac{\pi}{2}$ then $\text{Tan}^{-1}\left(\frac{a}{b+c}\right) + \text{Tan}^{-1}\left(\frac{b}{c+a}\right) + \text{Tan}^{-1}\left(\frac{c}{a+b}\right) =$

(A) $\text{Tan}^{-1}\left(\frac{r_3}{r}\right)$
(B) $\text{Tan}^{-1}\left(\frac{r_1+r_2}{r_3}\right)$
(C) $\text{Tan}^{-1}\left(\frac{1}{r}\right)$
(D) $\text{Tan}^{-1}\left(\frac{r_1+r_2+r_3}{r}\right)$

Answer: (A) $\text{Tan}^{-1}\left(\frac{r_3}{r}\right)$ · Official TGCHE final key

Q702 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

If the sides of a triangle are in the ratio $\sqrt{3} : \sqrt{5} : \sqrt{8+\sqrt{15}}$, then the largest angle in that triangle is

(A) $\frac{2\pi}{3}$
(B) $\frac{\pi}{2}$
(C) $\frac{\pi}{3}$
(D) $\frac{5\pi}{6}$

Answer: (A) $\frac{2\pi}{3}$ · Official TGCHE final key

Q703 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

In a $\triangle ABC$, if $\tan A : \tan B : \tan C = 1 : 2 : 3$ and $\sin A : \sin B : \sin C = \sqrt{5} : 2\sqrt{2} : k$, then $k =$

(A) $\sqrt{2}$
(B) 2
(C) $\sqrt{3}$
(D) 3

Answer: (D) 3 · Official TGCHE final key

Q704 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

In ΔABC, if $R = \frac{65}{8}$, $r\,r_1 = 42$ and $r_1 - r = 6.5$, then $s(s-a) =$

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(A) 147
(B) 126
(C) 105
(D) 168

Answer: (D) 168 · Official TGCHE final key

Q705 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

If $\cos x - \sin x = \sqrt{a}\sin x$, then $a\sin x + \cos x - \sin x =$

(A) $-\sqrt{a}\sin x$
(B) $\sqrt{a}\cos x$
(C) $(\sqrt{a}-1)\sin x$
(D) $-\sqrt{a}\cos x$

Answer: (B) $\sqrt{a}\cos x$ · Official TGCHE final key

Q706 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

If $\cot\left(\frac{A}{2}\right) = \sqrt{\frac{1+a}{1-a}} \cdot \cot\left(\frac{\theta}{2}\right)$, then $\cos\theta =$

(A) $\frac{(\cos A)+a}{1-a\cos A}$
(B) $\frac{(\cos A)-a}{1-a\cos A}$
(C) $\frac{(\cos A)-a}{1+a\cos A}$
(D) $\frac{(\cos A)+a}{1+a\cos A}$

Answer: (B) $\frac{(\cos A)-a}{1-a\cos A}$ · Official TGCHE final key

Q707 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

If the sides of a triangle are three consecutive natural numbers and its largest angle is twice the smallest one, then the area (in sq. units) of that triangle is

(A) 6
(B) $\frac{15}{4}\sqrt{7}$
(C) $\frac{18}{5}\sqrt{7}$
(D) $\frac{14}{3}\sqrt{5}$

Answer: (B) $\frac{15}{4}\sqrt{7}$ · Official TGCHE final key

Q708 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

In $\triangle ABC$, AD and BE are medians drawn from A and B. If $AD = \frac{7}{2}$, $\angle DAB = \frac{\pi}{8}$ and $\angle ABE = \frac{\pi}{4}$, then the area (in sq. units) of $\triangle ABC$ is

(A) $\frac{7}{12}$
(B) $\frac{49}{36}$
(C) $\frac{49}{12}$
(D) $\frac{7}{36}$

Answer: (C) $\frac{49}{12}$ · Official TGCHE final key

Q709 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

If the radius of the incircle of a triangle with sides $5k$, $6k$ and $5k$ is 6, then the largest angle of that triangle is

(A) $\mathrm{Cot}^{-1}\left(\frac{3}{7}\right)$
(B) $\mathrm{Tan}^{-1}\left(\frac{24}{7}\right)$
(C) $\mathrm{Sin}^{-1}\left(\frac{3}{5}\right)$
(D) $\mathrm{Cos}^{-1}\left(\frac{6}{\sqrt{85}}\right)$

Answer: (B) $\mathrm{Tan}^{-1}\left(\frac{24}{7}\right)$ · Official TGCHE final key

Q710 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

If $\cos x + \cos 2x + \ldots.. + \cos nx = \frac{A(x)}{2\sin\frac{x}{2}}$ then $\int_0^{\pi} A(x)\,dx =$

(A) $\frac{n^2}{n+1}$
(B) $\frac{-4n}{2n+1}$
(C) $\frac{2n}{2n+1}$
(D) $\frac{-n}{2n+1}$

Answer: (B) $\frac{-4n}{2n+1}$ · Official TGCHE final key

Q711 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

For some $a, b, c \in \mathbb{R}$, if $\sin 5\theta = a\cos^4\theta\sin\theta + b\cos^2\theta\sin^3\theta + c\sin^5\theta$, then $abc =$

(A) -10
(B) 10
(C) 0
(D) -50

Answer: (D) -50 · Official TGCHE final key

Q712 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

If $\alpha = \frac{\sin^3 x}{\cos^2 x}$, $\beta = \frac{\cos^3 x}{\sin^2 x}$ and $\sin x + \cos x = k$, then $\alpha\sin x + \beta\cos x + 3 =$

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(A) $\frac{2}{(k^2-1)^2}$
(B) $\frac{4}{(k^2-1)^2}$
(C) $\frac{k^2-1}{2}$
(D) $\frac{(k^2-1)^2}{4}$

Answer: (B) $\frac{4}{(k^2-1)^2}$ · Official TGCHE final key

Q713 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

If $A+B+C=60^\circ$, then $\cos(30^\circ-A)+\cos(30^\circ-B)+\cos(30^\circ-C)+\sin(A+B+C)=$

(A) $4\cos\frac{A}{2}\cos\frac{B}{2}\cos\frac{C}{2}$
(B) $4\sin\frac{A}{2}\sin\frac{B}{2}\sin\frac{C}{2}$
(C) $4\cos\frac{A}{2}\cos\frac{B}{2}\sin\frac{C}{2}$
(D) $4\cos\frac{A}{2}\sin\frac{B}{2}\cos\frac{C}{2}$

Answer: (A) $4\cos\frac{A}{2}\cos\frac{B}{2}\cos\frac{C}{2}$ · Official TGCHE final key

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Q714 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

If $|\sin x-\cos^2 x|\geq|3-3\sin x+\sin^2 x|+4|\sin x-1|$, then $x=$

(A) $(4n+1)\frac{\pi}{2}, n\in\mathbb{Z}$
(B) $2n\pi+\frac{\pi}{3}, n\in\mathbb{Z}$
(C) $n\pi+\frac{\pi}{2}, n\in\mathbb{Z}$
(D) $2n\pi+\frac{\pi}{6}, n\in\mathbb{Z}$

Answer: (A) $(4n+1)\frac{\pi}{2}, n\in\mathbb{Z}$ · Official TGCHE final key

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Q715 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

The perimeter of a ΔABC is 6 times the arithmetic mean of the sine of its angles. If its side BC is of unit length, then $\angle A=$

(A) $\frac{\pi}{6}$
(B) $\frac{\pi}{3}$
(C) $\frac{\pi}{2}$
(D) π

Answer: (A) $\frac{\pi}{6}$ · Official TGCHE final key

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Q716 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

In a ΔABC, with usual notation, if $r = r_1 - r_2 - r_3$, then $2R =$

(A) a

(B) $b + c$

(C) c

(D) $c + a$

Answer: (A) a · Official TGCHE final key

Q717 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

In a ΔABC, let $a, b, c, s, r, R, I, S, r_1, r_2, r_3$ stand for their usual meaning. Then Match the items of List-I with those of the items of List-II

List-I

A) $\tan\frac{A}{2} = \frac{r}{s-a}$

B) r

C) $(SI)^2 + 2Rr$

D) $r_1^2 + r_2^2 + r_3^2$

List-II

I) $(AI)\left(\sqrt{\frac{(s-b)(s-c)}{bc}}\right)$

II) R^2

III) $(4R + r + \sqrt{2}s)(4R + r - \sqrt{2}s)$

IV) $\frac{Rr}{S}$

V) $\frac{(s-b)(s-c)}{\Delta}$

The correct match is

(A) A-I, B-V, C-IV, D-III

(B) A-V, B-I, C-II, D-III

(C) A-V, B-I, C-IV, D-III

(D) A-I, B-IV, C-III, D-II

Answer: (B) A-V, B-I, C-II, D-III · Official TGCHE final key

Q718 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

Match the items of List – I with those of List – II

List - I

A) If $A = \begin{bmatrix} \cos^2 37^\circ & \cos^2 53^\circ & \cot 135^\circ \\ \sin^2 76^\circ & \sin 270^\circ & \sin^2 14^\circ \\ \cos 180^\circ & \cos^2 28^\circ & \cos^2 62^\circ \end{bmatrix}$, then $3 - |A| =$

B) If the period of $\frac{\cos(6x-4) - \sec(3-4x)}{\cot(5x+3) + \sin(3x+4)}$ is $\frac{2k\pi}{5}$, then $k =$

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C) The maximum value of $\cos^2\left(\frac{\pi}{4}-x\right)+(\sin x-\cos x)^2$ is

D) If $x+y+z=0^\circ$, then $\frac{\sin 2x+\sin 2y+\sin 2z}{\sin(-x)\sin(-y)\sin(-z)}=$

List - II

I) -4

II) 2

III) 3

IV) 4

V) 5

The correct match is

(A) A-III, B-V, C-II, D-IV

(B) A-III, B-I, C-II, D-IV

(C) A-I, B-III, C-IV, D-V

(D) A-II, B-I, C-III, D-V

Answer: (A) A-III, B-V, C-II, D-IV · Official TGCHE final key

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Q719 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

If $\cos\left(\frac{\alpha-\beta}{2}\right)=2\cos\left(\frac{\alpha+\beta}{2}\right)$, then $\tan\frac{\alpha}{2}\tan\frac{\beta}{2}=$

(A) $\frac{1}{2}$

(B) $\frac{1}{4}$

(C) $\frac{1}{3}$

(D) $\frac{1}{8}$

Answer: (C) $\frac{1}{3}$ · Official TGCHE final key

Q720 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

In a triangle ABC, if $a<b<c$ and $\frac{a^3+b^3+c^3}{\sin^3 A+\sin^3 B+\sin^3 C}=8$, then the maximum value of c is

(A) 3

(B) 4

(C) 2

(D) 6

Answer: (C) 2 · Official TGCHE final key

Q721 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

In a triangle ABC, if $c=9$, $s=10$ and $\Delta=10\sqrt{2}$ then $b\left[1+\sqrt{2}\tan\left(\frac{A-B}{2}\right)\right]=$

(A) $a\left[1-\sqrt{2}\tan\left(\frac{A-B}{2}\right)\right]$

(B) $c\left[1-\sqrt{2}\tan\left(\frac{A-B}{2}\right)\right]$

(C) $a\left[\sqrt{2}\tan\left(\frac{A-B}{2}\right)-1\right]$

(D) $c\left[\sqrt{2}\tan\left(\frac{A-B}{2}\right)-1\right]$

Answer: (A) $a\left[1-\sqrt{2}\tan\left(\frac{A-B}{2}\right)\right]$ · Checked by our team

Q722 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

In a Δ ABC, $\cot A+\cot B+\cot C=$

(A) $\frac{a^2+b^2+c^2}{\Delta}$

(B) $\frac{a+b+c}{4\Delta}$

(C) $\frac{a^2+b^2+c^2}{4\Delta}$

(D) $\frac{a^2+b^2+c^2}{2\Delta}$

Answer: (C) $\frac{a^2+b^2+c^2}{4\Delta}$ · Official TGCHE final key

Q723 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

$\sin^4\frac{\pi}{8}+\cos^4\frac{3\pi}{8}-\sin^4\frac{3\pi}{8}+\sin^4\frac{5\pi}{8}+\cos^4\frac{7\pi}{8}-\sin^4\frac{7\pi}{8}=$

(A) $\frac{1}{4}$

(B) $\frac{1}{2}$

(C) 0

(D) $\frac{3}{4}$

Answer: (D) $\frac{3}{4}$ · Official TGCHE final key

Q724 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

$\text{Cosec}^{-1}\left(\left[\frac{\tan^2\left(\frac{\alpha-\pi}{4}\right)-1}{\tan^2\left(\frac{\alpha-\pi}{4}\right)+1}+\cos\frac{\alpha}{2}\cdot\cot 5\alpha\right]\sec\frac{11\alpha}{2}\right)=$

(A) 2α
(B) 5α
(C) $\frac{\pi}{2} - 4\alpha$
(D) $\frac{5}{2}\alpha$

Answer: (B) 5α · Official TGCHE final key

Q725 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

Assertion (A) : If $A = 15^0$, $B = 17^0$ and $C = 13^0$ then $\cot 2A + \cot 2B + \cot 2C = \cot 2A \cot 2B \cot 2C$

Reason (R) : In a ΔPQR, $\text{Tan}\frac{P}{2}\text{Tan}\frac{Q}{2} + \text{Tan}\frac{Q}{2}\text{Tan}\frac{R}{2} + \text{Tan}\frac{P}{2}\text{Tan}\frac{R}{2} = 1$

The correct option among the following is

(A) (A) is true, (R) is true and (R) is the correct explanation for (A)
(B) (A) is true, (R) is true but (R) is not the correct explanation for (A)
(C) (A) is true but (R) is false
(D) (A) is false but (R) is true

Answer: (A) (A) is true, (R) is true and (R) is the correct explanation for (A) · Official TGCHE final key

Q726 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

The solution set of the trigonometric equation $\tan\theta + 5\cot\theta = \sec\theta$ is

(A) $\{\theta / \theta = 2n\pi \pm \frac{\pi}{3}, n \in \mathbb{Z}\}$
(B) $\{\theta / \theta = n\pi + (-1)^n\frac{\pi}{2}, n \in \mathbb{Z}\}$
(C) $\{\theta / \theta = n\pi + \frac{\pi}{6}, n \in \mathbb{Z}\}$
(D) ϕ

Answer: (D) ϕ · Official TGCHE final key

Q727 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

In a ΔABC if $\angle A = 3\angle B$, $CA = 9$ and $BC = 16$, then the length of AB is

(A) $\frac{5}{3}$
(B) $\frac{7}{3}$
(C) 2
(D) $\frac{35}{3}$

Answer: (D) $\frac{35}{3}$ · Official TGCHE final key

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Q728 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

In ΔABC, $\frac{1+\cos C}{r_1+r_2}+\frac{1+\cos A}{r_2+r_3}+\frac{1+\cos B}{r_1+r_3}=$

(A) $\frac{2}{3R}$
(B) $\frac{R}{2}$
(C) $\frac{3}{2R}$
(D) $\frac{6R}{5}$

Answer: (C) $\frac{3}{2R}$ · Official TGCHE final key

Q729 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

In a triangle ABC, if $\cos A\cos B+\sin A\sin B\sin C=1$ then $a:b:c=$

(A) $1:1:\sqrt{2}$
(B) $1:1:1$
(C) $\sqrt{2}:1:1$
(D) $1:\sqrt{2}:1$

Answer: (A) $1:1:\sqrt{2}$ · Official TGCHE final key

Q730 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

Let a be maximum value of $(3\cos\theta-4\sin\theta)$ and $\theta\neq\frac{n\pi}{2}$. If $\alpha=a\sin^2\theta\cdot\cos^3\theta$ and $\beta=a\sin^3\theta\cdot\cos^2\theta$, then $\sqrt{\frac{(\alpha^2+\beta^2)^5}{(\alpha\beta)^4}}=$

(A) $5\sin\frac{\theta}{2}\cos^2\frac{\theta}{2}$
(B) $-3\sin\theta$
(C) 5
(D) 16

Answer: (C) 5 · Official TGCHE final key

Q731 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

If A does not belong to the first quadrant, B does not belong to the second quadrant, $\sin A=\frac{11}{61}$ and $\cos B=\frac{-7}{25}$, then $A-B$ and $A+B$ lie respectively in the quadrants

(A) 1, 2
(B) 2, 3
(C) 3, 4
(D) 4, 1

Answer: (D) 4, 1 · Official TGCHE final key

Q732 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

If $\cos\left(\frac{\pi}{4}-x\right)\cos 2x+\sin x\ \sin 2x\ \sec x=\cos x\sin 2x\sec x+\cos\left(\frac{\pi}{4}+x\right)\cos 2x$, then a possible value of $\sec x$ is

(A) $\frac{1}{2\sqrt{2}}$
(B) $3\sqrt{2}$
(C) $\frac{1}{\sqrt{2}}$
(D) $\sqrt{2}$

Answer: (D) $\sqrt{2}$ · Official TGCHE final key

Q733 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

The general solution of the equation $(\sqrt{3}-1)\sin\theta+(\sqrt{3}+1)\cos\theta=2$ is

(A) $2n\pi\pm\frac{\pi}{4}+\frac{\pi}{12}$
(B) $n\pi+(-1)^n\frac{\pi}{4}+\frac{\pi}{12}$
(C) $2n\pi\pm\frac{\pi}{4}-\frac{\pi}{12}$
(D) $n\pi+(-1)^n\frac{\pi}{4}-\frac{\pi}{12}$

Answer: (A) $2n\pi\pm\frac{\pi}{4}+\frac{\pi}{12}$ · Official TGCHE final key

Q734 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

In a ΔABC, $(b^2-c^2)\cot A+(c^2-a^2)\cot B=$

(A) 0
(B) $2R^2[\sin 2A-\sin 2B]$
(C) $(b^2-a^2)\cot(A+B)$
(D) $2R^2[\tan 2A-\tan 2B]$

Answer: (B) $2R^2[\sin 2A-\sin 2B]$ · Official TGCHE final key

Q735 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

In a ΔABC, $\frac{\Delta^2}{a^2+b^2+c^2}\left(\frac{1}{r_1^2}+\frac{1}{r_2^2}+\frac{1}{r_3^2}+\frac{1}{r^2}\right)=$

(A) 0
(B) 1
(C) Δ
(D) S

Answer: (B) 1 · Official TGCHE final key

Q736 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

If $R:r_1:r=5:12:2$, then $r+r_3+r_2-r_1=$

(A) $\cos A$
(B) $\sin A$
(C) $2rr_1$
(D) $2r_1^2r$

Answer: (A) $\cos A$ · Official TGCHE final key

Q737 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

If $A = \sin\theta|\sin\theta|$, $B = \cos\theta|\cos\theta|$ and $\frac{99\pi}{2} \leq \theta \leq \frac{100\pi}{2}$, then

(A) $A + B = 1$
(B) $A + B = -1$
(C) $B - A = 1$
(D) $B - A = -1$

Answer: (C) $B - A = 1$ · Official TGCHE final key

Q738 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

If $\frac{\cos(\theta_1+\theta_2)}{\cos(\theta_1-\theta_2)} + \frac{\cos(\theta_3-\theta_4)}{\cos(\theta_3+\theta_4)} = 0$, then $\cot\theta_1 \cdot \cot\theta_2 \cdot \cot\theta_3 \cdot \cot\theta_4 =$

(A) 1
(B) -1
(C) 2
(D) $\frac{1}{2}$

Answer: (B) -1 · Official TGCHE final key

Q739 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

The equation $\sin^4 x - (k+3)\sin^2 x - k - 4 = 0$ has a solution if

(A) $k > 4$
(B) $-4 \leq k \leq -3$
(C) k is any positive integer
(D) $k = 0$

Answer: (B) $-4 \leq k \leq -3$ · Official TGCHE final key

Q740 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

In Δ ABC, if $a : b : c = 4 : 5 : 6$, then the ratio of the circumradius to its inradius is

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(A) 16 : 7
(B) 7 : 16
(C) 4 : 5
(D) 5 : 4

Answer: (A) 16 : 7 · Official TGCHE final key

Q741 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

In a ΔABC, if $b = 10$, $a\cos^2\frac{C}{2} + c\cos^2\frac{A}{2} = 15$, and the area of the triangle is $15\sqrt{3}$ sq.units, then $\cot\frac{B}{2} =$

(A) $\frac{3}{2}$
(B) $\frac{1}{2}$
(C) $\frac{2}{\sqrt{3}}$
(D) $\frac{5}{\sqrt{3}}$

Answer: (D) $\frac{5}{\sqrt{3}}$ · Official TGCHE final key

Q742 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

If d_1, d_2, d_3 are the diameters of three ex-circles of a Δ ABC, then $d_1d_2 + d_2d_3 + d_3d_1 =$

(A) $(a+b+c)^2$
(B) $ab + bc + ca$
(C) $4\Delta^2$
(D) $2s^2$

Answer: (A) $(a+b+c)^2$ · Official TGCHE final key

Q743 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

If α is a root of the equation $25\cos^2\theta + 5\cos\theta - 12 = 0$, for $\frac{\pi}{2} < \alpha < \pi$, then $\sin 2\alpha =$

(A) $\frac{-3}{5}$
(B) $\frac{-24}{25}$
(C) $\frac{-4}{25}$
(D) $\frac{-13}{18}$

Answer: (B) $\frac{-24}{25}$ · Official TGCHE final key

Q744 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

If $\sin 2\theta + \sin 2\varphi = \frac{1}{2}$ and $\cos 2\theta + \cos 2\varphi = \frac{3}{2}$, then $\cos^2(\theta - \varphi) =$

(A) $\frac{3}{8}$
(B) $\frac{5}{8}$
(C) $\frac{3}{4}$
(D) $\frac{5}{4}$

Answer: (B) $\frac{5}{8}$ · Official TGCHE final key

Q745 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

If $\tan\alpha = 2\sin\beta\ \sin\gamma\ \text{cosec}(\beta+\gamma)$, then

(A) $\cot\beta, \cot\alpha, \cot\gamma$ are in harmonic progression
(B) $\tan\gamma, \tan\alpha, \tan\beta$ are in harmonic progression
(C) $\cot\alpha, \cot\beta, \cot\gamma$ are in arithmetic progression
(D) $\tan\alpha, \tan\beta, \tan\gamma$ are in arithmetic progression

Answer: (B) $\tan\gamma, \tan\alpha, \tan\beta$ **are in harmonic progression** · Official TGCHE final key

Q746 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

The number of real roots of the equation $\sin^{2020}x - \cos^{2020}x + 2019 = 2020$ in the interval $\left(-\frac{3\pi}{2}, \frac{5\pi}{2}\right)$

(A) 1
(B) 3
(C) 5
(D) infinitely many

Answer: (B) 3 · Official TGCHE final key

Q747 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

In $\triangle ABC$, If $a^2 - c^2 = b(b-c)$, $\sqrt{2}a = 2b - c$ and $R = \frac{1}{\sqrt{3}}$ then $b =$

(A) $\frac{\sqrt{2}}{\sqrt{3}}$
(B) $\frac{\sqrt{3}-1}{\sqrt{6}}$
(C) $\frac{\sqrt{3}+1}{\sqrt{6}}$
(D) $\frac{\sqrt{3}}{\sqrt{2}}$

Answer: (C) $\frac{\sqrt{3}+1}{\sqrt{6}}$ · Official TGCHE final key

Q748 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

If $\triangle ABC$ is a non isosceles triangle and $\angle C = 90^\circ$, then $\frac{a^2+b^2}{a^2-b^2}\sin(A-B) =$

(A) 1
(B) 2
(C) 0
(D) -1

Answer: (A) 1 · Official TGCHE final key

Q749 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

In any triangle ABC, $\cos^2\frac{A}{2}+\cos^2\frac{B}{2}+\cos^2\frac{C}{2} =$

(A) $1+\frac{2r}{R}$
(B) $2-\frac{1}{2R}$
(C) $2\left(1+\frac{r}{4R}\right)$
(D) $2\left(1+\frac{r}{2R}\right)$

Answer: (C) $2\left(1+\frac{r}{4R}\right)$ · Official TGCHE final key

Q750 TS EAMCET 2019 · 6 May · Shift 1 MCQ

If $\cot\theta+\tan\theta = 3$, and $1-\cos^2\theta-\alpha\cos\theta = 0$, then

(A) $6\alpha^2(9-\alpha^2) = 1$
(B) $6\alpha^2(\alpha^2-9) = 1$
(C) $9\alpha^2(6-\alpha^2) = 1$
(D) $9\alpha^2(\alpha^2-6) = 1$

Answer: (C) $9\alpha^2(6-\alpha^2) = 1$ · Official TGCHE final key

Q751 TS EAMCET 2019 · 6 May · Shift 1 MCQ

If $\sin x+\sin y = p$, $\cos x+\cos y = q$, then $\sec(x+y) =$

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(A) $\frac{2pq}{p^2+q^2}$
(B) $\frac{p^2+q^2}{q^2-p^2}$
(C) $\frac{2pq}{\sqrt{p^2+q^2}}$
(D) $\frac{p+q}{p^2+q^2}$

Answer: (B) $\frac{p^2+q^2}{q^2-p^2}$ · Official TGCHE final key

Q752 TS EAMCET 2019 · 6 May · Shift 1 MCQ

The number of solutions of the equation $\sin A - 5\sin 2A + \sin 3A = \cos A - 5\cos 2A + \cos 3A$ in $(0, \pi)$ is

(A) 1
(B) 2
(C) 3
(D) 4

Answer: (B) 2 · Official TGCHE final key

Q753 TS EAMCET 2019 · 6 May · Shift 1 MCQ

In a ΔABC, if $a + 3b = 3c$, then $\sin\frac{A}{2} =$

(A) $\frac{a}{2}\sqrt{\frac{3}{bc}}$
(B) $\frac{a}{3}\sqrt{\frac{2}{bc}}$
(C) $\frac{2a}{3}\sqrt{\frac{1}{bc}}$
(D) $\frac{ab}{3}\sqrt{\frac{2}{c}}$

Answer: (B) $\frac{a}{3}\sqrt{\frac{2}{bc}}$ · Official TGCHE final key

Q754 TS EAMCET 2019 · 6 May · Shift 1 MCQ

Let one of the sides of a triangle be 17 cm and the sum of all the sides of the triangle be 40 cm. If the sum of two adjacent sides is 35 cm, then the area (in sq. cms) of the triangle is

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(A) $15\sqrt{2}$
(B) $20\sqrt{2}$
(C) $30\sqrt{2}$
(D) $35\sqrt{2}$

Answer: (C) $30\sqrt{2}$ · Official TGCHE final key

Q755 TS EAMCET 2019 · 6 May · Shift 1 MCQ

If the perimeter of the triangle ABC is 50 cm, then $b\cos^2\frac{C}{2}+c\cos^2\frac{B}{2}=$

(A) 20
(B) 25
(C) 30
(D) 35

Answer: (B) 25 · Official TGCHE final key

Q756 TS EAMCET 2019 · 4 May · Shift 1 MCQ

If the angles of depression of the top and bottom of a short building from the top of a tall building are 30° and 60° respectively, then the ratio of the heights of short and tall buildings is

(A) $2:3$
(B) $1:2$
(C) $1:3$
(D) $1:4$

Answer: (A) $2:3$ · Official TGCHE final key

Q757 TS EAMCET 2019 · 4 May · Shift 1 MCQ

$\cos 18^\circ =$

(A) $\frac{1}{8}(5-\sqrt{5})$
(B) $\frac{1}{2\sqrt{2}}\sqrt{5+\sqrt{5}}$
(C) $\frac{\sqrt{5}-1}{4}$
(D) $\frac{\sqrt{5}+1}{4}$

Answer: (B) $\frac{1}{2\sqrt{2}}\sqrt{5+\sqrt{5}}$ · Official TGCHE final key

Q758 TS EAMCET 2019 · 4 May · Shift 1 MCQ

If $A+B+C=\pi$, then $\sin A-\sin B+\sin C=$

(A) $4\cos\left(\frac{A}{2}\right)\cos\left(\frac{B}{2}\right)\cos\left(\frac{C}{2}\right)$
(B) $4\sin\left(\frac{A}{2}\right)\sin\left(\frac{B}{2}\right)\cos\left(\frac{C}{2}\right)$
(C) $\sin\left(\frac{A}{2}\right)\cos\left(\frac{B}{2}\right)\sin\left(\frac{C}{2}\right)$
(D) $4\sin\left(\frac{A}{2}\right)\cos\left(\frac{B}{2}\right)\sin\left(\frac{C}{2}\right)$

Answer: (D) $4\sin\left(\frac{A}{2}\right)\cos\left(\frac{B}{2}\right)\sin\left(\frac{C}{2}\right)$ · Official TGCHE final key

Q759 TS EAMCET 2019 · 4 May · Shift 1 MCQ

For $n \in \mathbb{Z}$, the general solution of the trigonometric equation $\sin x - \sqrt{3}\cos x + 4\sin 2x - 4\sqrt{3}\cos 2x + \sin 3x - \sqrt{3}\cos 3x = 0$ is

(A) $\frac{n\pi}{2} + \frac{\pi}{8}$
(B) $\frac{n\pi}{2} + \frac{\pi}{6}$
(C) $\frac{n\pi}{2} \pm \frac{\pi}{6}$
(D) $2n\pi \pm \frac{\pi}{6}$

Answer: (B) $\frac{n\pi}{2} + \frac{\pi}{6}$ · Official TGCHE final key

Q760 TS EAMCET 2019 · 4 May · Shift 1 MCQ

In a triangle ABC, if $a^2 - b^2 - c^2 = bc(\lambda^2 - 2\lambda - 1)$, then

(A) $0 \le \lambda \le 4$
(B) $-1 \le \lambda \le 2$
(C) $-1 \le \lambda \le 3$
(D) $0 \le \lambda \le 3$

Answer: (C) $-1 \le \lambda \le 3$ · Official TGCHE final key

Q761 TS EAMCET 2019 · 4 May · Shift 1 MCQ

If a and b respectively represent the lengths of a side and a diagonal of a regular pentagon that is inscribed in a circle, then $\frac{b}{a} =$

(A) $2\sin\frac{\pi}{5}$
(B) $2\cos\frac{\pi}{5}$
(C) $\cos\frac{\pi}{5}$
(D) $\sin\frac{\pi}{5}$

Answer: (B) $2\cos\frac{\pi}{5}$ · Official TGCHE final key

Q762 TS EAMCET 2019 · 4 May · Shift 1 MCQ

In a right angled triangle, if the difference between the two acute angles is 60°, then the ratio of the lengths of the hypotenuse and the perpendicular drawn to the hypotenuse from its opposite vertex is

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(A) $2:1$
(B) $4:1$
(C) $8:1$
(D) $3:1$

Answer: (B) $4:1$ · Official TGCHE final key

Q763 TS EAMCET 2019 · 4 May · Shift 2 MCQ

$\left(1+\cos\frac{\pi}{8}\right)\left(1+\cos\frac{3\pi}{8}\right)\left(1+\cos\frac{5\pi}{8}\right)\left(1+\cos\frac{7\pi}{8}\right)=$

(A) $\frac{1+\sqrt{2}}{2\sqrt{2}}$
(B) $\frac{\pi}{8}$
(C) $\frac{1}{8}$
(D) $\frac{1}{2}$

Answer: (C) $\frac{1}{8}$ · Official TGCHE final key

Q764 TS EAMCET 2019 · 4 May · Shift 2 MCQ

If A and B are acute angles satisfying $3\cos^2 A+2\cos^2 B=4$ and $\frac{3\sin A}{\sin B}=\frac{2\cos B}{\cos A}$, then $A+2B=$

(A) 30°
(B) 45°
(C) 60°
(D) 90°

Answer: (D) 90° · Official TGCHE final key

Q765 TS EAMCET 2019 · 4 May · Shift 2 MCQ

If $A+B+C=\frac{\pi}{3}$, then $\sin\left(\frac{\pi-6A}{6}\right)+\sin\left(\frac{\pi-6B}{6}\right)+\sin C=$

(A) $-1+4\cos\left(\frac{\pi-6A}{12}\right)\cos\left(\frac{\pi-6B}{12}\right)\sin\frac{C}{2}$
(B) $4\sin\left(\frac{\pi+6A}{12}\right)\sin\left(\frac{\pi+6B}{12}\right)\cos\frac{C}{2}$
(C) $1-4\cos\left(\frac{\pi-6A}{12}\right)\cos\left(\frac{\pi-6B}{12}\right)\cos\frac{\pi-6C}{12}$
(D) $4\cos\left(\frac{\pi-6A}{12}\right)\cos\left(\frac{\pi-6B}{12}\right)\sin\frac{C}{2}$

Answer: (D) $4\cos\left(\frac{\pi-6A}{12}\right)\cos\left(\frac{\pi-6B}{12}\right)\sin\frac{C}{2}$ · Official TGCHE final key

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Q766 TS EAMCET 2019 · 4 May · Shift 2 MCQ

If $\sqrt{2}\sin^2 x + (3\sqrt{2}+1)\sin x + 3 > 0$ and $x^2 - 7x + 10 < 0$, then x lies in the interval

(A) $\left(\frac{-\pi}{4}, \frac{3\pi}{4}\right)$

(B) $\left(2, \frac{5\pi}{4}\right)$

(C) $\left(0, \frac{3\pi}{2}\right)$

(D) $\left(\frac{5\pi}{4}, 5\right)$

Answer: (B) $\left(2, \frac{5\pi}{4}\right)$ · Official TGCHE final key

Q767 TS EAMCET 2019 · 4 May · Shift 2 MCQ

In a triangle ABC, if $\cos A \cos B + \sin A \sin B \sin C = 1$, then $\sin A + \sin B + \sin C =$

(A) $\frac{2+\sqrt{3}}{2}$

(B) $1+\sqrt{2}$

(C) $\frac{2\sqrt{3}-1}{2}$

(D) $\frac{3+\sqrt{3}}{2}$

Answer: (B) $1+\sqrt{2}$ · Official TGCHE final key

Q768 TS EAMCET 2019 · 4 May · Shift 2 MCQ

In a $\triangle ABC$, if the medians AD and BE are such that $AD = 4$, $\angle DAB = \frac{\pi}{6}$ and $\angle ABE = \frac{\pi}{3}$, then the area of $\triangle ABC$ (in square units) is

(A) $\frac{16}{3\sqrt{3}}$

(B) $\frac{48}{3\sqrt{3}}$

(C) $\frac{64}{3\sqrt{3}}$

(D) $\frac{32}{3\sqrt{3}}$

Answer: (D) $\frac{32}{3\sqrt{3}}$ · Official TGCHE final key

Q769 TS EAMCET 2019 · 4 May · Shift 2 MCQ

In a $\triangle ABC$, if $r_1 = 2r_2 = 3r_3$, then $a : b =$

(A) $3:5$
(B) $5:3$
(C) $4:5$
(D) $5:4$

Answer: (D) $5:4$ · Official TGCHE final key

Q770 TS EAMCET 2019 · 3 May · Shift 1 MCQ

$\text{Sin}^2(3^\circ)+\text{Sin}^2(6^\circ)+\text{Sin}^2(9^\circ)+\ldots+\text{Sin}^2(84^\circ)+\text{Sin}^2(87^\circ)+\text{Sin}^2(90^\circ)=$

(A) $\frac{31}{2}$
(B) $\frac{39}{2}$
(C) $\frac{59}{2}$
(D) 36

Answer: (A) $\frac{31}{2}$ · Official TGCHE final key

Q771 TS EAMCET 2019 · 3 May · Shift 1 MCQ

$\cos\frac{\pi}{7}-\cos\frac{2\pi}{7}+\cos\frac{3\pi}{7}-\cos\frac{4\pi}{7}+\cos\frac{5\pi}{7}-\cos\frac{6\pi}{7}=$

(A) 0
(B) $\frac{3}{2}$
(C) $\frac{3}{4}$
(D) 1

Answer: (D) 1 · Official TGCHE final key

Q772 TS EAMCET 2019 · 3 May · Shift 1 MCQ

The number of integral values of k for which the equation $7\cos x+5\sin x=2k+1$ has a solution is

(A) 4
(B) 6
(C) 8
(D) 10

Answer: (C) 8 · Official TGCHE final key

Q773 TS EAMCET 2019 · 3 May · Shift 1 MCQ

A wire of length 44 cm is bent into an arc of a circle of radius 12 cm. The angle (in degrees) subtended by the arc at the centre of the circle is

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(A) $\left(\frac{11}{3}\right)^\circ$
(B) $\left(\frac{660}{\pi}\right)^\circ$
(C) 150°
(D) $\left(\frac{5}{3}\right)^\circ$

Answer: (B) $\left(\frac{660}{\pi}\right)^\circ$ · Official TGCHE final key

Q774 TS EAMCET 2019 · 3 May · Shift 1 MCQ

In any triangle ABC, if $a : b : c = 2 : 3 : 4$, then $R : r =$

(A) $8 : 3$
(B) $16 : 9$
(C) $5 : 16$
(D) $16 : 5$

Answer: (D) $16 : 5$ · Official TGCHE final key

Q775 TS EAMCET 2019 · 3 May · Shift 1 MCQ

Corresponding to a triangle ABC, match the items given in List - I with the items given in List - II.
List - I
A) $rr_2 = r_1r_3$
B) $r_1 + r_2 = r_3 - r$
C) $r_1 = r + 2R$
List - II
I) $\angle A = 90^\circ$
II) $b^2 = c^2 + a^2$
III) $\angle C = 90^\circ$
IV) $\angle B = 120^\circ$
The correct match is

(A) A-II, B-III, C-I
(B) A-II, B-I, C-III
(C) A-I, B-IV, C-III
(D) A-III, B-I, C-IV

Answer: (A) A-II, B-III, C-I · Official TGCHE final key

Q776 TS EAMCET 2019 · 3 May · Shift 2 MCQ

Maximum value of $\left(2\cos^2 18^\circ - \sin 18^\circ\right)\left|\cos\theta + 3\sqrt{2}\cos\left(\theta + \frac{\pi}{4}\right) + 3\right|$ is

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(A) $5\sqrt{2}$
(B) $4\sqrt{5}$
(C) 3
(D) 12

Answer: (D) 12 · Official TGCHE final key

Q777 TS EAMCET 2019 · 3 May · Shift 2 MCQ

If $0 < A < B < \frac{\pi}{4}$, $\cos(A+B) = \frac{11}{61}$ and $\sin(A-B) = \frac{24}{25}$, then $\sin 2A + \sin 2B =$

(A) $\frac{684}{1525}$
(B) $\frac{156}{1525}$
(C) $\frac{168}{305}$
(D) $\frac{137}{305}$

Answer: (C) $\frac{168}{305}$ · Official TGCHE final key

Q778 TS EAMCET 2019 · 3 May · Shift 2 MCQ

If $A + B + C = 270^\circ$, then $\cos 2A + \cos 2B + \cos 2C + 4\sin A \sin B \sin C =$

(A) 3
(B) 2
(C) 1
(D) -1

Answer: (C) 1 · Official TGCHE final key

Q779 TS EAMCET 2019 · 3 May · Shift 2 MCQ

The general solution of $\cos 2x - 2\tan x + 2 = 0$ is

(A) $(2n+1)\frac{\pi}{3},\ n \in \mathbb{Z}$
(B) $(n+1)\frac{\pi}{3},\ n \in \mathbb{Z}$
(C) $n\pi + \frac{\pi}{3},\ n \in \mathbb{Z}$
(D) $n\pi + \frac{\pi}{4},\ n \in \mathbb{Z}$

Answer: (D) $n\pi + \frac{\pi}{4},\ n \in \mathbb{Z}$ · Official TGCHE final key

Q780 TS EAMCET 2019 · 3 May · Shift 2 MCQ

p_1, p_2, p_3 are the altitudes of a triangle ABC drawn from the vertices A, B and C respectively. If Δ is the area of the triangle and $2s$ is the sum of its sides a, b and c, then $\frac{1}{p_1} + \frac{1}{p_2} - \frac{1}{p_3} =$

(A) $\frac{s-a}{\Delta}$
(B) $\frac{s-b}{\Delta}$
(C) $\frac{s-c}{\Delta}$
(D) $\frac{s}{\Delta}$

Answer: (C) $\frac{s-c}{\Delta}$ · Official TGCHE final key

Q781 TS EAMCET 2019 · 3 May · Shift 2 MCQ

If in triangle ABC, $a^2+2bc-(b^2+c^2)=ab\sin\frac{C}{2}\cos\frac{C}{2}$, then $\cot(B+C)=$

(A) $-\frac{8}{15}$
(B) $\frac{1}{4}$
(C) $-\frac{15}{8}$
(D) 4

Answer: (C) $-\frac{15}{8}$ · Official TGCHE final key

Q782 TS EAMCET 2019 · 3 May · Shift 2 MCQ

If p_1, p_2, p_3 are the altitudes of a triangle ABC from the vertices A, B, C respectively, then with the usual notation, $\frac{1}{r_1^2}+\frac{1}{r_2^2}+\frac{1}{r_3^2}+\frac{1}{r^2}=$

(A) $p_1p_2p_3$
(B) $\frac{a^2b^2c^2}{4\Delta^2}$
(C) $\frac{a^2b^2c^2}{\Delta^2}$
(D) $4\left(\frac{1}{p_1^2}+\frac{1}{p_2^2}+\frac{1}{p_3^2}\right)$

Answer: (D) $4\left(\frac{1}{p_1^2}+\frac{1}{p_2^2}+\frac{1}{p_3^2}\right)$ · Official TGCHE final key

Q783 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

If $\tan A-\tan B=x$ and $\cot A-\cot B=y$, then $\cot(A-B)=$

(A) $\frac{xy}{x+y}$
(B) $\frac{xy}{x-y}$
(C) $\frac{x-y}{xy}$
(D) $\frac{y-x}{xy}$

Answer: (D) $\frac{y-x}{xy}$ · Official APSCHE final key

Q784 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

$\tan\frac{\pi}{5}+2\tan\frac{2\pi}{5}+4\cot\frac{4\pi}{5}=$

(A) $\cot\frac{\pi}{5}$
(B) $\cot\frac{2\pi}{5}$
(C) $\cot\frac{3\pi}{5}$
(D) $\cot\frac{4\pi}{5}$

Answer: (A) $\cot\frac{\pi}{5}$ · Official APSCHE final key

Q785 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

If $\sin x+\sin y=\frac{\sqrt{3}+1}{2}$ and $\cos x+\cos y=\frac{\sqrt{3}-1}{2}$, then $\tan^2\left(\frac{x-y}{2}\right)+\tan^2\left(\frac{x+y}{2}\right)=$

(A) $8+4\sqrt{3}$
(B) $6+4\sqrt{3}$
(C) $3+\sqrt{3}$
(D) $12+6\sqrt{3}$

Answer: (A) $8+4\sqrt{3}$ · Official APSCHE final key

Q786 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

In Δ PQR, let $\angle P>\angle Q$. If the radian measures of $\angle P$ and $\angle Q$ satisfy the equation $4\sin^3 x-3\sin x+a=0,\ 0<a<1$, then the radian measure of $\angle R$ is

(A) $\frac{\pi}{3}$
(B) $\frac{\pi}{2}$
(C) $\frac{2\pi}{3}$
(D) $\frac{5\pi}{6}$

Answer: (C) $\frac{2\pi}{3}$ · Official APSCHE final key

Q787 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

If ABC is a right angled triangle with 90° at C and $a>b$, then $\frac{a^2+b^2}{a^2-b^2}\sin(A-B)=$

(A) $\frac{3}{2}$
(B) 1
(C) $\frac{1}{2}$
(D) 0

Answer: (B) 1 · Official APSCHE final key

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Q788 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

a, b, c are the sides of a scalene triangle ABC. If angles α, β, γ lie between 0 and π such that $\cos\alpha = \frac{a}{b+c}$, $\cos\beta = \frac{b}{c+a}$ and $\cos\gamma = \frac{c}{a+b}$, then $\tan^2\frac{\alpha}{2} + \tan^2\frac{\beta}{2} + \tan^2\frac{\gamma}{2} =$

(A) $\frac{1}{3}$

(B) 2

(C) 1

(D) $\frac{3}{2}$

Answer: (C) 1 · Official APSCHE final key

Q789 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

In triangle ABC, if $r_1 = 36,\ r_2 = 18$ and $r_3 = 12$, then $a + b =$

(A) 36

(B) 24

(C) 30

(D) 54

Answer: (D) 54 · Official APSCHE final key

Q790 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

Let α, β, and γ be such that $0 < \alpha < \beta < \gamma < 2\pi$. For any $x \in \mathbb{R}$ if $\cos(x+\alpha) + \cos(x+\beta) + \cos(x+\gamma) = 0$, then $\tan(\gamma - \alpha) =$

(A) $-\sqrt{3}$

(B) 0

(C) 1

(D) $\sqrt{3}$

Answer: (D) $\sqrt{3}$ · Official APSCHE final key

Q791 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

If ABC is not a right angled triangle and $\sin\left(\frac{\pi}{4} - A\right)\sin\left(\frac{\pi}{4} - B\right) = -\frac{1}{2\sqrt{2}}\operatorname{cosec}\left(\frac{\pi}{4} - C\right)$, then $\tan A\tan B + \tan B\tan C + \tan C\tan A =$

(A) $\cot A + \cot B + \cot C$

(B) $\tan A + \tan B + \tan C$

(C) $\frac{1}{\tan A + \tan B + \tan C}$

(D) $\frac{1}{\cot A + \cot B + \cot C}$

Answer: (B) $\tan A + \tan B + \tan C$ · Official APSCHE final key

Q792 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

If $\tan\frac{\theta}{2} = \operatorname{cosec}\theta - \sin\theta$, then $\tan^2\frac{\theta}{2} =$

(A) $2-\sqrt{5}$
(B) $-2+\sqrt{5}$
(C) $2+\sqrt{5}$
(D) $\sqrt{2}+5$

Answer: (B) $-2+\sqrt{5}$ · Official APSCHE final key

Q793 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

The number of real values of $x \in [0,2\pi] - \left\{\frac{\pi}{2}, \frac{3\pi}{2}\right\}$ satisfying the equation $|\cos x|^{2\sin^2 x - 3\sin x + 1} = 1$ is

(A) 3
(B) 4
(C) 5
(D) 6

Answer: (C) 5 · Official APSCHE final key

Q794 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

In Δ ABC, if a, b, c are in arithmetic progression, then $\cos A + 2\cos B + \cos C =$

(A) 1
(B) 2
(C) $\frac{3}{2}$
(D) $\sqrt{3}+1$

Answer: (B) 2 · Official APSCHE final key

Q795 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

If the area of triangle ABC is $b^2 - (c-a)^2$, then $\tan B =$

(A) 1
(B) $\frac{13}{15}$
(C) $\frac{1}{4}$
(D) $\frac{8}{15}$

Answer: (D) $\frac{8}{15}$ · Official APSCHE final key

Q796 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

In Δ ABC, $\frac{1}{r_1^2} + \frac{1}{r_2^2} + \frac{1}{r_3^2} + \frac{1}{r^2} =$

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(A) $\frac{a^2+b^2+c^2}{\Delta^2}$
(B) $\frac{a+b+c}{\Delta^2}$
(C) $\frac{s^2}{\Delta^2}$
(D) $\frac{4s^2}{\Delta^2}$

Answer: (A) $\frac{a^2+b^2+c^2}{\Delta^2}$ · Official APSCHE final key

Q797 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

The smallest positive value of x (in degrees) for which $\tan(x+100^\circ) = \tan(x+50^\circ)\cdot\tan x\cdot\tan(x-50^\circ)$ is

(A) 25
(B) $82\frac{1}{2}$
(C) 55
(D) 30

Answer: (D) 30 · Official APSCHE final key

Q798 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

For $\alpha \neq 0$, if $\cos(\theta+\alpha)$, $\cos\theta$ and $\cos(\theta-\alpha)$ are in harmonic progression, then $\sec^2\theta\cdot\cos^2\frac{\alpha}{2} =$

(A) 2
(B) 1
(C) $\frac{1}{2}$
(D) $\frac{1}{4}$

Answer: (C) $\frac{1}{2}$ · Official APSCHE final key

Q799 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

If $\cos 2\theta + \alpha\sin\theta = 2\alpha - 7$ has a solution, then

(A) $\alpha \in [-2, 4]$
(B) $\alpha \in [-6, -2]$
(C) $\alpha \in [6, 8]$
(D) $\alpha \in [2, 6]$

Answer: (D) $\alpha \in [2, 6]$ · Official APSCHE final key

Q800 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

In a triangle ABC, if the angle $A = 60^\circ$, then $\frac{1}{a+b} + \frac{1}{a+c} =$

(A) $\frac{3(1+b-c)}{a+b+c}$
(B) $\frac{2}{a+b+c}$
(C) $\frac{3}{a+b+c}$
(D) $\frac{a+b+c}{3a^2}$

Answer: (C) $\frac{3}{a+b+c}$ · Official APSCHE final key

Q801 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

In a ΔABC, $8R^3 \sum \sin^3 A \cos(B-C) =$

(A) abc
(B) $4abc$
(C) $3R\Delta$
(D) $12R\Delta$

Answer: (D) $12R\Delta$ · Official APSCHE final key

Q802 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

In a ΔABC, if $a : b : c = 4 : 5 : 6$, then the ratio of the radius of the circum circle to the radius of the incircle is

(A) $13 : 7$
(B) $15 : 7$
(C) $16 : 7$
(D) $17 : 9$

Answer: (C) $16 : 7$ · Official APSCHE final key

Q803 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

The maximum value of the function $f(x) = \tan\left(x + \frac{2\pi}{3}\right) - \tan\left(x + \frac{\pi}{6}\right) + \cos\left(x + \frac{\pi}{6}\right)$ in $\left[-\frac{5\pi}{12}, -\frac{\pi}{3}\right]$ is

(A) $\frac{11\sqrt{2}}{6}$
(B) $\frac{11\sqrt{3}}{6}$
(C) 3
(D) 1

Answer: (B) $\frac{11\sqrt{3}}{6}$ · Official APSCHE final key

Q804 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

$\operatorname{cosec} 48^\circ + \operatorname{cosec} 96^\circ + \operatorname{cosec} 192^\circ + \operatorname{cosec} 384^\circ =$

(A) -2
(B) -1
(C) 0
(D) $\frac{\sqrt{3}}{2}$

Answer: (C) 0 · Official APSCHE final key

Q805 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

$\sin^4\frac{\pi}{8}+\sin^4\frac{2\pi}{8}+\sin^4\frac{3\pi}{8}+\sin^4\frac{4\pi}{8}+\sin^4\frac{5\pi}{8}+\sin^4\frac{6\pi}{8}+\sin^4\frac{7\pi}{8}=$

(A) $\frac{3}{2}$
(B) $\frac{5}{2}$
(C) 3
(D) $\frac{7}{2}$

Answer: (C) 3 · Official APSCHE final key

Q806 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

If $x:y:z=\tan\left(\frac{\pi}{15}+\alpha\right):\tan\left(\frac{\pi}{15}+\beta\right):\tan\left(\frac{\pi}{15}+\gamma\right)$, then $\frac{z+x}{z-x}\sin^2(\gamma-\alpha)+\frac{x+y}{x-y}\sin^2(\alpha-\beta)+\frac{y+z}{y-z}\sin^2(\beta-\gamma)=$

(A) $\sin^2\theta$
(B) $\cos^2\theta$
(C) 0
(D) 1

Answer: (C) 0 · Official APSCHE final key

Q807 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

Let $[x]$ denote the largest integer $\leq x$. If the number of solutions of $\sin x\sqrt{4\cos^2 x}=\frac{2+x-[x]}{1-x+[x]}$ is k, then for $x\in\left[\frac{\pi}{4},\frac{\pi}{3}\right]$, the value of $k^{\tan^2 x}$

(A) is equal to 1
(B) lies in between 2^1 and 2^3
(C) is equal to zero
(D) lies in between $\frac{1}{2^3}$ and $\frac{1}{2}$

Answer: (C) is equal to zero · Official APSCHE final key

Q808 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

The area (in square units) of ΔABC if $\angle A=75^\circ$, $\angle B=45^\circ$ and $a=2(\sqrt{3}+1)$ is

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(A) 6
(B) $2\sqrt{3}$
(C) $6-2\sqrt{3}$
(D) $6+2\sqrt{3}$

Answer: (D) $6+2\sqrt{3}$ · Official APSCHE final key

Q809 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

In a ΔABC, if $3a=b+c$, then $\cot\frac{B}{2}\cot\frac{C}{2}=$

(A) 1
(B) 2
(C) $\frac{1}{3}$
(D) $\frac{1}{2}$

Answer: (B) 2 · Official APSCHE final key

Q810 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

In a ΔABC, if $\frac{2r_2r_3}{r_2-r_1}=r_3-r_1$, then $\frac{r_1(r_2+r_3)}{\sqrt{r_1r_2+r_2r_3+r_3r_1}}=$

(A) $\frac{a^2+b^2+c^2}{\Delta^2}$
(B) $b-c$
(C) $\frac{1}{2R}$
(D) $2R$

Answer: (D) $2R$ · Official APSCHE final key

Q811 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

If $z=\cos 6^\circ+i\sin 6^\circ$, then $\sum_{n=1}^{20}\text{Im}\left(z^{2n-1}\right)=$

(A) 0
(B) -1
(C) $\frac{-3}{4\sin 6^\circ}$
(D) $\frac{3}{4\sin 6^\circ}$

Answer: (D) $\frac{3}{4\sin 6^\circ}$ · Official APSCHE final key

Q812 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

Let $x=a\sin^\alpha\theta\cos^{\alpha+1}\theta$, $y=a\sin^{\alpha+1}\theta\cos^\alpha\theta$, $\left(\theta\neq\frac{n\pi}{2}\right)$. If $\frac{(x^2+y^2)^m}{(xy)^n}$ is independent of θ then the relation between α, m and n is

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(A) $2m\alpha = n(2\alpha + 1)$

(B) $m + n = \alpha$

(C) $2m\alpha = 2n\alpha + m$

(D) $2m = (2n + 1)\alpha$

Answer: (A) $2m\alpha = n(2\alpha + 1)$ · Official APSCHE final key

Q813 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

Assertion (A): If $\sqrt{4\sin^4\theta + \sin^2 2\theta} + 4\cos^2\left(\frac{\pi}{4} - \frac{\theta}{2}\right) = 2$ then θ lies in 3rd quadrant or 4th quadrant.

Reason (R): $\sqrt{\sin^2\theta} = \sin\theta$

(A) Both (A) and (R) are true and (R) is the correct explanation of (A)

(B) Both (A) and (R) are true but (R) is not the correct explanation of (A)

(C) (A) is true but (R) is false

(D) (A) is false but (R) is true

Answer: (C) (A) is true but (R) is false · Official APSCHE final key

Q814 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

If $x = \frac{\sin^3\theta}{\cos^2\theta}$ and $y = \frac{\cos^3\theta}{\sin^2\theta}$ where $\sin\theta + \cos\theta = \frac{1}{2}$, then $x + y =$

(A) $\frac{48}{9}$

(B) $\frac{34}{9}$

(C) $\frac{65}{18}$

(D) $\frac{79}{18}$

Answer: (D) $\frac{79}{18}$ · Official APSCHE final key

Q815 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

If $4\left(\sin 2x\ \sin 4x + \sin^2 x\right) = 3$ then $x =$

(A) $\frac{2n\pi}{3} \pm \frac{\pi}{9}, n \in Z$

(B) $\frac{n\pi}{3} \pm \frac{\pi}{9}, n \in Z$

(C) $\frac{n\pi}{3} + (-1)^n\frac{\pi}{9}, n \in Z$

(D) $\frac{n\pi}{3} + (-1)^n\frac{2\pi}{9}, n \in Z$

Answer: (B) $\frac{n\pi}{3} \pm \frac{\pi}{9}, n \in Z$ · Official APSCHE final key

Q816 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

In Δ ABC, if $a : b : c = 3 : 5 : 7$, then $\cos A + \cos B =$

(A) $\frac{13}{7}$
(B) $\frac{11}{7}$
(C) $\frac{12}{7}$
(D) $\frac{10}{7}$

Answer: (C) $\frac{12}{7}$ · Official APSCHE final key

Q817 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

If ABCD is a cyclic quadrilateral with $AB = 6$, $BC = 4$, $CD = 5$, $DA = 3$ and $\angle ABC = \theta$ then $\cos\theta =$

(A) $\frac{3}{13}$
(B) $\frac{18}{76}$
(C) $\frac{16}{78}$
(D) $\frac{78}{86}$

Answer: (A) $\frac{3}{13}$ · Official APSCHE final key

Q818 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

Let a triangle ABC be inscribed in a circle of radius 2 units. If the 3 bisectors of the angles A, B and C are extended to cut the circle at A_1, B_1 and C_1 respectively, then the value of $\left[\frac{AA_1\cos\frac{A}{2} + BB_1\cos\frac{B}{2} + CC_1\cos\frac{C}{2}}{\sin A + \sin B + \sin C}\right]^2 =$

(A) 4
(B) 16
(C) 25
(D) 1

Answer: (B) 16 · Official APSCHE final key

Q819 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

Let M and m respectively denote the maximum and the minimum values of $[f(\theta)]^2$ where $f(\theta) = \sqrt{a^2\cos^2\theta + b^2\sin^2\theta} + \sqrt{a^2\sin^2\theta + b^2\cos^2\theta}$. Then $M - m =$

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(A) $a^2 + b^2$
(B) $(a - b)^2$
(C) a^2b^2
(D) $(a + b)^2$

Answer: (B) $(a - b)^2$ · Official APSCHE final key

Q820 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

If $\cos A = -\frac{60}{61}$ and $\tan B = -\frac{7}{24}$ and neither A nor B is in the second quadrant, then the angle $A + \frac{B}{2}$ lies in the quadrant

(A) 1
(B) 2
(C) 3
(D) 4

Answer: (A) 1 · Official APSCHE final key

Q821 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

$\cos^2 5^\circ - \cos^2 15^\circ - \sin^2 15^\circ + \sin^2 35^\circ + \cos 15^\circ \sin 15^\circ - \cos 5^\circ \sin 35^\circ =$

(A) 0
(B) 1
(C) $\frac{3}{2}$
(D) 2

Answer: (A) 0 · Official APSCHE final key

Q822 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

If $\cos\theta \neq 0$ and $\sec\theta - 1 = (\sqrt{2} - 1)\tan\theta$ then $\theta =$

(A) $n\pi + \frac{\pi}{8},\ n \in Z$
(B) $2n\pi + \frac{\pi}{4}$ (or) $2n\pi,\ n \in Z$
(C) $2n\pi + \frac{\pi}{8},\ n \in Z$
(D) $2n\pi - \frac{\pi}{4}$ (or) $2n\pi,\ n \in Z$

Answer: (B) $2n\pi + \frac{\pi}{4}$ (or) $2n\pi,\ n \in Z$ · Official APSCHE final key

Q823 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

In triangle ABC, if $\frac{b+c}{9} = \frac{c+a}{10} = \frac{a+b}{11}$, then $\frac{\cos A + \cos B}{\cos C} =$

(A) $\frac{9}{10}$
(B) $\frac{10}{11}$
(C) $\frac{11}{12}$
(D) $\frac{12}{13}$

Answer: (C) $\frac{11}{12}$ · Official APSCHE final key

Q824 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

In a ΔABC, with usual notation, match the items in List - I with the items in List - II and choose the correct option.

List - I

A) $r_1 r_2 \sqrt{\frac{4R - r_1 - r_2}{r_1 + r_2}}$

B) $\frac{r_2(r_3 + r_1)}{\sqrt{r_1 r_2 + r_2 r_3 + r_3 r_1}}$

C) $\frac{a}{c} = \frac{\sin(A - B)}{\sin(B - C)}$

D) $bc\,\mathrm{Cos}^2\frac{A}{2}$

List - II

I) b

II) a^2, b^2, c^2 are in AP

III) Δ

IV) $R\,r_1 r_2 r_3$

V) $s(s - a)$

The correct match is

(A) A-IV, B-III, C-I, D-V
(B) A-V, B-IV, C-III, D-II
(C) A-III, B-I, C-II, D-V
(D) A-IV, B-V, C-II, D-I

Answer: (C) A-III, B-I, C-II, D-V · Official APSCHE final key

Q825 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

If a, b and c are the sides of ΔABC for which $r_1 = 8,\ r_2 = 12$ and $r_3 = 24$ then the ordered triad $(a, b, c) =$

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(A) (12, 20, 16)
(B) (12, 16, 20)
(C) (16, 12, 20)
(D) (20, 16, 12)

Answer: (B) (12, 16, 20) · Official APSCHE final key

Q826 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

If $\sin\alpha = p$, then the quadratic equation whose roots are $\tan\frac{\alpha}{2}$, $\cot\frac{\alpha}{2}$ is

(A) $px^2 - 2x + p = 0$
(B) $px^2 + 2x + p = 0$
(C) $px^2 + x + p = 0$
(D) $px^2 - x + p = 0$

Answer: (A) $px^2 - 2x + p = 0$ · Official APSCHE final key

Q827 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

$\cos 66^\circ + \sin 84^\circ =$

(A) $\frac{1}{4}(\sqrt{3}+\sqrt{5})$
(B) $\frac{1}{4}\sqrt{5}(\sqrt{3}+1)$
(C) $\frac{1}{4}(\sqrt{3}+1)(\sqrt{5}+1)$
(D) $\frac{1}{4}\sqrt{3}(\sqrt{5}+1)$

Answer: (D) $\frac{1}{4}\sqrt{3}(\sqrt{5}+1)$ · Official APSCHE final key

Q828 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

If $\tan\theta + \tan 2\theta + \sqrt{3}\tan\theta\tan 2\theta = \sqrt{3}$, then the general values of θ are

(A) $(3n+1)\frac{\pi}{3}$, $n \in \mathbb{Z}$
(B) $(3n+1)\frac{\pi}{9}$, $n \in \mathbb{Z}$
(C) $(3n+1)\frac{\pi}{6}$, $n \in \mathbb{Z}$
(D) $(2n+1)\frac{\pi}{9}$, $n \in \mathbb{Z}$

Answer: (B) $(3n+1)\frac{\pi}{9}$, $n \in \mathbb{Z}$ · Official APSCHE final key

Q829 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

In ΔABC, if the median AD drawn through A is perpendicular to the side AC, then $3ca\cos A\cos C + 2a^2 =$

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(A) c^2
(B) $2c^2$
(C) $3c^2$
(D) $4c^2$

Answer: (B) $2c^2$ · Official APSCHE final key

Q830 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

Let Δ denote the area of a ΔABC. If α, β, γ are the lengths of the altitudes of the ΔABC, then $\alpha^{-2} + \beta^{-2} + \gamma^{-2} =$

(A) $\frac{4}{\Delta}(\tan A + \tan B + \tan C)$
(B) $\frac{1}{\Delta}(\cot A + \cot B + \cot C)$
(C) $\frac{\Delta^2}{2}(\tan A + \tan B + \tan C)$
(D) $\frac{\Delta^2}{4}(\cot A + \cot B + \cot C)$

Answer: (B) $\frac{1}{\Delta}(\cot A + \cot B + \cot C)$ · Official APSCHE final key

Q831 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

In ΔABC, $(r_2 + r_3)\cot\left(\frac{B+C}{2}\right) =$

(A) $a + b + c$
(B) a
(C) b
(D) c

Answer: (B) a · Official APSCHE final key

Q832 TS EAMCET 2018 · 7 May · Shift 1 MCQ

If $\sin\theta + \sin^2\theta = 1$ and $\cos^{12}\theta + a\cos^{10}\theta + b\cos^8\theta + c\cos^6\theta + d = 0$ then

(A) $ab = cd$
(B) $ac = bd$
(C) $ab + cd = 0$
(D) $ac + bd = 0$

Answer: (D) $ac + bd = 0$ · The council's preliminary key

Q833 TS EAMCET 2018 · 7 May · Shift 1 MCQ

$\cos 20^\circ \cos 40^\circ \cos 60^\circ \cos 80^\circ =$

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(A) $\frac{3}{8}$
(B) $\frac{1}{8}$
(C) $\frac{\sqrt{3}}{8}$
(D) $\frac{1}{16}$

Answer: (D) $\frac{1}{16}$ · The council's preliminary key

Q834 TS EAMCET 2018 · 7 May · Shift 1 MCQ

If $A+B+C=\frac{\pi}{4}$, then $4\cos\frac{A}{2}\cos\frac{B}{2}\cos\frac{C}{2}-\cos\frac{\pi}{8}=$

(A) $\cos\left(\frac{\pi}{4}-A\right)+\cos\left(\frac{\pi}{4}-B\right)+\cos\left(\frac{\pi}{4}-C\right)$
(B) $\cos\left(\frac{\pi}{8}-A\right)+\cos\left(\frac{\pi}{8}-B\right)+\cos\left(\frac{\pi}{8}-C\right)$
(C) $\sin\left(\frac{\pi}{4}-A\right)+\sin\left(\frac{\pi}{4}-B\right)+\sin\left(\frac{\pi}{4}-C\right)$
(D) $\sin\left(\frac{\pi}{8}-A\right)+\sin\left(\frac{\pi}{8}-B\right)+\sin\left(\frac{\pi}{8}-C\right)$

Answer: (B) $\cos\left(\frac{\pi}{8}-A\right)+\cos\left(\frac{\pi}{8}-B\right)+\cos\left(\frac{\pi}{8}-C\right)$ · The council's preliminary key

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Q835 TS EAMCET 2018 · 7 May · Shift 1 MCQ

Let $A=\{x\in\mathbb{R}/|\sqrt{3}\cos x-\sin x|\geq 2,\ 0\leq x\leq 2\pi\}$. If $x_1\in A, x_2\in A$ then $\frac{x_1}{x_2}=$

(A) $\frac{5}{23}$
(B) $\frac{11}{17}$
(C) $\frac{5}{11}$
(D) $\frac{11}{23}$

Answer: (C) $\frac{5}{11}$ · The council's preliminary key

Q836 TS EAMCET 2018 · 7 May · Shift 1 MCQ

The greatest angle of the triangle whose sides are x^2+x+1, $2x+1$ and x^2-1 is

(A) 75°
(B) 90°
(C) 105°
(D) 120°

Answer: (D) 120° · The council's preliminary key

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Q837 TS EAMCET 2018 · 7 May · Shift 1 MCQ

In a $\triangle ABC$, if $a : b : c = 4 : 5 : 6$, then the ratio of the radius of its circumcircle to that of its incircle

(A) $16 : 7$
(B) $12 : 7$
(C) $15 : 8$
(D) $16 : 9$

Answer: (A) $16 : 7$ · The council's preliminary key

Q838 TS EAMCET 2018 · 7 May · Shift 1 MCQ

In a $\triangle ABC$, the mid point of BC is D. If AD is perpendicular to AC, then $\cos A \cos C =$

(A) $\frac{1}{3}\frac{c^2+a^2}{ab}$
(B) $\frac{2(c^2+a^2)}{ab}$
(C) $\frac{2(c^2-a^2)}{3ac}$
(D) $\frac{3(a^2+b^2)}{2bc}$

Answer: (C) $\frac{2(c^2-a^2)}{3ac}$ · The council's preliminary key

Q839 TS EAMCET 2018 · 5 May · Shift 1 MCQ

The number of all the possible integral values of $n > 2$ such that $\sin\frac{\pi}{2n} + \cos\frac{\pi}{2n} = \frac{\sqrt{n}}{2}$

(A) 5
(B) 4
(C) 3
(D) infinity

Answer: (C) 3 · The council's preliminary key

Q840 TS EAMCET 2018 · 5 May · Shift 1 MCQ

If α and β are angles in the first quadrant such that $\tan\alpha = \frac{1}{7}$ and $\sin\beta = \frac{1}{\sqrt{10}}$, then $\alpha + 2\beta =$

(A) 30°
(B) 45°
(C) 75°
(D) 90°

Answer: (B) 45° · The council's preliminary key

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Q841 TS EAMCET 2018 · 5 May · Shift 1 MCQ

$\cos\left(\frac{\pi}{7}\right)\cos\left(\frac{2\pi}{7}\right)\cos\left(\frac{4\pi}{7}\right) =$

(A) $\frac{-1}{8}$
(B) $\frac{1}{8}$
(C) $-\frac{3\sqrt{3}}{8}$
(D) 1

Answer: (A) $\frac{-1}{8}$ · The council's preliminary key

Q842 TS EAMCET 2018 · 5 May · Shift 1 MCQ

If $0 < \theta < \frac{\pi}{2}$, then solution of the equation $\sin\theta - 3\sin 2\theta + \sin 3\theta = \cos\theta - 3\cos 2\theta + \cos 3\theta$ is

(A) $\frac{\pi}{16}$
(B) $\frac{\pi}{12}$
(C) $\frac{\pi}{8}$
(D) $\frac{\pi}{6}$

Answer: (C) $\frac{\pi}{8}$ · The council's preliminary key

Q843 TS EAMCET 2018 · 5 May · Shift 1 MCQ

In a triangle ABC, if $a = 5,\ b = 6,\ c = 7$, then the length of the median drawn from B is

(A) $2\sqrt{7}$
(B) $2\sqrt{6}$
(C) $\sqrt{7}$
(D) $\sqrt{6}$

Answer: (A) $2\sqrt{7}$ · The council's preliminary key

Q844 TS EAMCET 2018 · 5 May · Shift 1 MCQ

In ΔABC, if $\cot\frac{A}{2} : \cot\frac{B}{2} : \cot\frac{C}{2} = 4 : 3 : 2$, then $a : b : c =$

(A) $2 : 3 : 4$
(B) $6 : 5 : 7$
(C) $4 : 5 : 6$
(D) $5 : 6 : 7$

Answer: (D) $5 : 6 : 7$ · The council's preliminary key

Q845 TS EAMCET 2018 · 5 May · Shift 1 MCQ

In ΔABC, if $\cos A\cos B + \sin A\sin B\sin C = 1$ and $C = \frac{\pi}{2}$ then $A : B =$

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(A) $1:4$

(B) $1:3$

(C) $1:2$

(D) $1:1$

Answer: (D) $1:1$ · The council's preliminary key

Q846 TS EAMCET 2018 · 5 May · Shift 2 MCQ

If $\cos\frac{\pi}{15}\cos\frac{2\pi}{15}\cos\frac{4\pi}{15}\cos\frac{5\pi}{15}\cos\frac{7\pi}{15}\cos\frac{30\pi}{15}=x$, then $\frac{1}{8x}=$

(A) 4

(B) $\frac{1}{4}$

(C) 8

(D) $\frac{4}{3}$

Answer: (A) 4 · The council's preliminary key

Q847 TS EAMCET 2018 · 5 May · Shift 2 MCQ

If $A+B+C=2S$, then $\sin(S-A)+\sin(S-B)-\sin C=$

(A) $-4\sin\frac{S-A}{2}\sin\frac{S-B}{2}\sin\frac{C}{2}$

(B) $4\sin\frac{S-A}{2}\sin\frac{S-B}{2}\sin\frac{C}{2}$

(C) $-4\sin\frac{S-A}{2}\sin\frac{S-B}{2}\cos\frac{C}{2}$

(D) $4\sin\frac{S-A}{2}\sin\frac{S-B}{2}\cos\frac{C}{2}$

Answer: (B) $4\sin\frac{S-A}{2}\sin\frac{S-B}{2}\sin\frac{C}{2}$ · The council's preliminary key

Q848 TS EAMCET 2018 · 5 May · Shift 2 MCQ

When a is irrational, the number of solutions satisfying the equation $1+\sin^2 ax=\cos x$ is

(A) 1

(B) 0

(C) 2

(D) Infinite

Answer: (A) 1 · The council's preliminary key

Q849 TS EAMCET 2018 · 5 May · Shift 2 MCQ

In any triangle, if the angles are in the ratio $1:2:3$, then their corresponding sides are in the ratio

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(A) $1 : \sqrt{2} : 1$
(B) $1 : \sqrt{3} : 2$
(C) $1 : \sqrt{3} : 1$
(D) $1 : 1 : \sqrt{2}$

Answer: (B) $1 : \sqrt{3} : 2$ · The council's preliminary key

Q850 TS EAMCET 2018 · 5 May · Shift 2 MCQ

Two ships leave a port from a point at the same time. One goes with a velocity of 3kmph along North-East making an angle of 45° with East direction and the other travels with a velocity of 4 kmph along South-East making an angle of 15° with East direction. Then the distance between the ships at the end of two hours is

(A) $2\sqrt{13}$
(B) $\sqrt{13}$
(C) 5
(D) 10

Answer: (A) $2\sqrt{13}$ · The council's preliminary key

Q851 TS EAMCET 2018 · 5 May · Shift 2 MCQ

In Δ ABC, $r_1 + r_2 + r_3 =$

(A) $4R$
(B) $4R + r$
(C) $4R - r$
(D) $4R + s^2$

Answer: (B) $4R + r$ · The council's preliminary key

Q852 TS EAMCET 2018 · 4 May · Shift 1 MCQ

If $A(n) = \sin^n \alpha + \cos^n \alpha$, then $A(1)A(4) + A(2)A(5) =$

(A) $A(1)A(2) + A(4)A(5)$
(B) $A(1)A(6) + A(2)A(3)$
(C) $A(1)A(3) + A(2)A(6)$
(D) $A(1)A(2) + A(3)A(6)$

Answer: (B) $A(1)A(6) + A(2)A(3)$ · The council's preliminary key

Q853 TS EAMCET 2018 · 4 May · Shift 1 MCQ

When $\frac{\sin 9\theta}{\cos 27\theta} + \frac{\sin 3\theta}{\cos 9\theta} + \frac{\sin \theta}{\cos 3\theta} = k(\tan 27\theta - \tan \theta)$ is defined, then $k =$

(A) $\frac{\pi}{2}$
(B) $-\frac{1}{2}$
(C) $\frac{1}{2}$
(D) $\frac{\pi}{4}$

Answer: (C) $\frac{1}{2}$ · The council's preliminary key

Q854 TS EAMCET 2018 · 4 May · Shift 1 MCQ

If $x=\sum_{n=0}^{\infty}\cos^{2n}\theta$, $y=\sum_{n=0}^{\infty}\sin^{2n}\theta$, $z=\sum_{n=0}^{\infty}\cos^{2n}\theta\sin^{2n}\theta$ and $0<\theta<\frac{\pi}{2}$, then

(A) $xz+yz=xy+z$
(B) $xyz=yz+x$
(C) $xy+z=xy+zx$
(D) $x+y+z=xyz+z$

Answer: (A) $xz+yz=xy+z$ · The council's preliminary key

Q855 TS EAMCET 2018 · 4 May · Shift 1 MCQ

Number of solutions of the equation $\sin x-\sin 2x+\sin 3x=2\cos^2 x-2\cos x$ in $(0,\pi)$ is

(A) 1
(B) 3
(C) 2
(D) 4

Answer: (C) 2 · The council's preliminary key

Q856 TS EAMCET 2018 · 4 May · Shift 1 MCQ

In $\triangle ABC$, if $a=5$ and $\tan\frac{A-B}{2}=\frac{1}{4}\tan\frac{A+B}{2}$, then $\sqrt{a^2-b^2}=$

(A) 2
(B) 3
(C) 4
(D) 5

Answer: (C) 4 · The council's preliminary key

Q857 TS EAMCET 2018 · 4 May · Shift 1 MCQ

In a triangle ABC, if $A=2B$ and the sides opposite to the angles A,B,C are $\alpha+1$, $\alpha-1$ and α respectively then $\alpha=$

(A) 3
(B) 4
(C) 5
(D) 6

Answer: (C) 5 · The council's preliminary key

Q858 TS EAMCET 2018 · 4 May · Shift 1 MCQ

In $\triangle ABC$, right angled at A, the circumradius, inradius and radius of the excircle opposite to A are respectively in the ratio $2:5:\lambda$, then the roots of the equation $x^2-(\lambda-5)x+(\lambda-6)=0$ are

(A) $3,4$
(B) $5,13$
(C) $1,3$
(D) $8,13$

Answer: (C) $1,3$ · The council's preliminary key

Q859 TS EAMCET 2018 · 4 May · Shift 2 MCQ

$\sin 10^\circ \sin 50^\circ \sin 60^\circ \sin 70^\circ = m$ and $\tan 20^\circ \tan 40^\circ \tan 60^\circ \tan 80^\circ = n$ then $\frac{n}{m} =$

(A) $\frac{3\sqrt{3}}{16}$
(B) $16\sqrt{3}$
(C) $\frac{16}{\sqrt{3}}$
(D) $8\sqrt{3}$

Answer: (B) $16\sqrt{3}$ · The council's preliminary key

Q860 TS EAMCET 2018 · 4 May · Shift 2 MCQ

Assertion (A): If $\alpha=12^\circ$, $\beta=15^\circ$, $\gamma=18^\circ$ then $\tan 2\alpha \tan 2\beta + \tan 2\beta \tan 2\gamma + \tan 2\gamma \tan 2\alpha = 1$
Reason (R): In $\triangle ABC$, $\tan\frac{A}{2}\tan\frac{B}{2}+\tan\frac{B}{2}\tan\frac{C}{2}+\tan\frac{C}{2}\tan\frac{A}{2}=1$
Which of the following is true?

(A) Both (A) and (R) are true and (R) is the correct explanation of (A)
(B) Both (A) and (R) are true, but (R) is not the correct explanation of (A)
(C) (A) is true, but (R) is false
(D) (A) is false, but (R) is true

Answer: (A) Both (A) and (R) are true and (R) is the correct explanation of (A) · The council's preliminary key

Q861 TS EAMCET 2018 · 4 May · Shift 2 MCQ

$\cot\theta - \tan\theta - 2\tan 2\theta - 4\tan 4\theta =$

(A) $4\cot 8\theta - \tan 6\theta$
(B) $\cot 8\theta + \tan 3\theta$
(C) $\cot 8\theta + \cot 6\theta$
(D) $8\cot 8\theta$

Answer: (D) $8\cot 8\theta$ · The council's preliminary key

Q862 TS EAMCET 2018 · 4 May · Shift 2 MCQ

If the general solution of $\sin x + 3\sin 3x + \sin 5x = 0$ is $x = y$ then the set of all values of $\cos y$ is

(A) $\{-1, -\frac{\sqrt{3}}{2}, \frac{\sqrt{3}}{2}, 1\}$
(B) $\{-1, \frac{1}{2}, 1\}$
(C) $\{-\frac{\sqrt{3}}{2}, 0, 1, \frac{\sqrt{3}}{2}\}$
(D) $\{-1, -\frac{1}{2}, \frac{1}{2}, 1\}$

Answer: (D) $\{-1, -\frac{1}{2}, \frac{1}{2}, 1\}$ · The council's preliminary key

Q863 TS EAMCET 2018 · 4 May · Shift 2 MCQ

In a $\triangle ABC$, $\sin A$ and $\sin B$ satisfy $c^2x^2 - c(a+b)x + ab = 0$, then

(A) the triangle is acute angled
(B) the triangle is obtuse angled
(C) $\sin C = \frac{\sqrt{3}}{2}$
(D) $\sin A + \cos A = \frac{a+b}{c}$

Answer: (D) $\sin A + \cos A = \frac{a+b}{c}$ · The council's preliminary key

Q864 TS EAMCET 2018 · 4 May · Shift 2 MCQ

Let ABC be an isosceles triangle with BC as its base. Then $rr_1 =$

(A) a^2
(B) $\frac{a^2}{2}$
(C) $R^2\sin^2 A$
(D) $R^2\sin^2 2B$

Options (3) or (4) were accepted. More than one answer was accepted. · The council's preliminary key

Q865 TS EAMCET 2018 · 4 May · Shift 2 MCQ

In a $\triangle ABC$, $a^4 + b^4 + c^4 = 2b^2c^2 + 2a^2b^2$ then $B =$

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(A) $\frac{\pi}{4}$ or $\frac{3\pi}{4}$
(B) $\frac{\pi}{2}$
(C) $\frac{\pi}{3}$ or $\frac{2\pi}{3}$
(D) $\frac{\pi}{6}$ or $\frac{5\pi}{6}$

Answer: (A) $\frac{\pi}{4}$ or $\frac{3\pi}{4}$ · The council's preliminary key

Q866 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

$\left(1+\cos\frac{\pi}{8}\right)\left(1+\cos\frac{2\pi}{8}\right)\left(1+\cos\frac{3\pi}{8}\right)\left(1+\cos\frac{4\pi}{8}\right)\left(1+\cos\frac{5\pi}{8}\right)\left(1+\cos\frac{6\pi}{8}\right)\left(1+\cos\frac{7\pi}{8}\right) =$

(A) $\frac{1}{8}$
(B) $\frac{1}{16}$
(C) $\frac{1}{32}$
(D) $\frac{1}{64}$

Answer: (B) $\frac{1}{16}$ · The council's preliminary key

Q867 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

If A is in the third quadrant and $\tan A = \frac{\sqrt{7}}{3}$, then $18 - 16\sin^2\frac{A}{2} - 32\sin\frac{A}{2}\sin\frac{5A}{2} =$

(A) -6
(B) 11
(C) 5
(D) 10

Answer: (B) 11 · The council's preliminary key

Q868 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

Let $P(\alpha,\beta)$ and $Q(\gamma,\delta)$ be two points that lie on the curve $\tan^2(x+y)+\cos^2(x+y)+y^2+2y=0$ in the XY-plane. If the distance between P and Q is d, then $\cos d =$

(A) 0
(B) $(-1)^n, n\in\mathbb{N}$
(C) $\pm\pi$
(D) $\pm 2n\pi, n\in\mathbb{N}$

Answer: (B) $(-1)^n, n\in\mathbb{N}$ · The council's preliminary key

Q869 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

In ΔABC, if $\frac{s-a}{11}=\frac{s-b}{12}=\frac{s-c}{13}$ then $\tan^2\left(\frac{A}{2}\right)+\tan^2\left(\frac{C}{2}\right) =$

(A) $\frac{290}{429}$
(B) $\frac{290}{143}$
(C) $\frac{143}{33}$
(D) $\frac{113}{33}$

Answer: (A) $\frac{290}{429}$ · The council's preliminary key

Q870 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

In ΔABC, $(a-b)^2 \sin^2\left(\frac{A+B}{2}\right) + (a+b)^2 \sin^2\left(\frac{C}{2}\right) =$

(A) b^2
(B) a^2
(C) c^2
(D) $a^2 + b^2 - c^2$

Answer: (C) c^2 · The council's preliminary key

Q871 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

In a triangle, if the ex-radii r_1, r_2, r_3 are in the ratio 1:2:3, then its sides are in the ratio

(A) 5:8:9
(B) 5:4:3
(C) 7:9:11
(D) 1:2:3

Answer: (A) 5:8:9 · The council's preliminary key

Q872 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

The value of $\tan 40^\circ + \tan 11^\circ + \tan 20^\circ - \tan 56^\circ + \tan 56^\circ \tan 11^\circ + \sqrt{3} \tan 40^\circ \tan 20^\circ$ is

(A) $\sqrt{3} - 1$
(B) $\sqrt{3} + 1$
(C) 1
(D) 0

Answer: (A) $\sqrt{3} - 1$ · The council's preliminary key

Q873 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

If θ is in the third quadrant, then $\sqrt{4\sin^4\theta + \sin^2 2\theta} + 4\cos^2\left(\frac{\pi}{4} - \frac{\theta}{2}\right) =$

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(A) $1 + 2\sin\theta$

(B) 2

(C) 1

(D) $2 + 4\sin\theta$

Answer: (B) 2 · The council's preliminary key

Q874 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

If $\sec(\theta+\alpha),\ \sec\theta,\ \sec(\theta-\alpha)$ are in arithmetic progression, then $\cos\theta \cdot \sec\frac{\alpha}{2} =$

(A) $\frac{\sqrt{3}}{2}$

(B) $\frac{1}{\sqrt{2}}$

(C) ± 2

(D) $\pm\sqrt{2}$

Answer: (D) $\pm\sqrt{2}$ · The council's preliminary key

Q875 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

The number of values of x with $0 \le x \le 2\pi$ satisfying the equation $\sin x + \sin 2x + \sin 3x = \cos x + \cos 2x + \cos 3x$ is

(A) 7

(B) 6

(C) 5

(D) 4

Answer: (B) 6 · Checked by our team

Q876 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

In ΔABC, if A $= 60^\circ$ and B $= 105^\circ$ then $\frac{2R^2(b-c)\sin A\sin B\sin C}{(b+c)(s-a\cos C-c\cos A)(s-a\cos B-b\cos A)} =$

(A) $\frac{1}{\sqrt{2}}$

(B) $\sqrt{3}$

(C) 1

(D) $\frac{1}{\sqrt{3}}$

Answer: (C) 1 · The council's preliminary key

Q877 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

In Δ ABC, if $\underline{|A} = 90^\circ$, then $2(r+R) =$

(A) $a+b$
(B) $b+c$
(C) $c+a$
(D) $a+b+c$

Answer: (B) $b+c$ · The council's preliminary key

Q878 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

The maximum and minimum values of the function $f:\mathbb{R}\to\mathbb{R}$ defined by $f(x)=5\cos x+3\cos\left(x+\frac{\pi}{3}\right)+8$ for all $x\in\mathbb{R}$, are respectively

(A) $15, 1$
(B) $8, -8$
(C) $-7, -15$
(D) $1, -15$

Answer: (A) $15, 1$ · The council's preliminary key

Q879 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

If $A=\{x\in[0,2\pi]\,/\,\tan x-\tan^2 x>0\}$ and $B=\{x\in[0,2\pi]\,/\,|\sin x|<\frac{1}{2}\}$, then $A\cap B=$

(A) $\left(0,\frac{\pi}{6}\right)\cup\left(\pi,\frac{7\pi}{6}\right)$
(B) $\left(0,\frac{\pi}{4}\right)\cup\left(\pi,\frac{7\pi}{6}\right)$
(C) $\left(0,\frac{\pi}{6}\right)\cup\left(\frac{5\pi}{6},\frac{7\pi}{6}\right)$
(D) $\left(\frac{\pi}{6},\frac{7\pi}{6}\right)$

Answer: (A) $\left(0,\frac{\pi}{6}\right)\cup\left(\pi,\frac{7\pi}{6}\right)$ · The council's preliminary key

Q880 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

The number of solutions of the equation $4\cos 2\theta\cdot\cos 3\theta=\sec\theta$, when $0<\theta<\pi$, is

(A) 2
(B) 4
(C) 6
(D) 8

Answer: (C) 6 · The council's preliminary key

Q881 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

In ΔABC if $a=2$, $b=\sqrt{6}$ and $c=\sqrt{3}+1$, then $\sin^2 C-\sin^2 A=$

(A) $\frac{1+\sqrt{3}}{4}$
(B) $\frac{\sqrt{3}}{2}$
(C) $\frac{\sqrt{3}}{4}$
(D) $\frac{3}{4}$

Answer: (C) $\frac{\sqrt{3}}{4}$ · The council's preliminary key

Q882 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

In ΔABC, $a^3 \cdot \cos(B-C) + b^3 \cdot \cos(C-A) + c^3 \cdot \cos(A-B) =$

(A) abc
(B) $a+b+c$
(C) $2abc$
(D) $3abc$

Answer: (D) $3abc$ · The council's preliminary key

Q883 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

In ΔABC, $\frac{r_1-r}{a} + \frac{r_2-r}{b} + \frac{r_3-r}{c} =$

(A) $\frac{r_1+r_2+r_3}{s}$
(B) $\frac{r_1+r_2+r_3}{2s}$
(C) $\frac{r_1+r_2+r_3}{2}$
(D) $\frac{r_1+r_2+r_3}{3s}$

Answer: (A) $\frac{r_1+r_2+r_3}{s}$ · The council's preliminary key

Q884 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

If $\tan\theta = \frac{\cos 25^\circ + \sin 25^\circ}{\cos 25^\circ - \sin 25^\circ}$ and θ is in the third quadrant, then $\theta =$

(A) 200°
(B) 205°
(C) 225°
(D) 250°

Answer: (D) 250° · The council's preliminary key

Q885 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

If $\cos A = \frac{7}{25}$ and $\frac{3\pi}{2} < A < 2\pi$, then $\cos\frac{A}{4} + \cos\frac{A}{2} - \cos 2A =$

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(A) $\frac{1}{\sqrt{10}}+\frac{27}{625}$
(B) $\frac{3}{\sqrt{10}}-\frac{27}{625}$
(C) $\frac{3}{\sqrt{10}}+\frac{27}{625}$
(D) $\frac{1}{\sqrt{10}}-\frac{27}{625}$

Answer: (A) $\frac{1}{\sqrt{10}}+\frac{27}{625}$ · The council's preliminary key

Q886 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

In ΔABC, if $\cos 3A+\cos 3B+\cos 3C+\cos 3\pi=0$ then the least value of the sum of two of its angles is

(A) $\frac{\pi}{6}$
(B) $\frac{2\pi}{3}$
(C) $\frac{\pi}{3}$
(D) $\frac{\pi}{4}$

Answer: (C) $\frac{\pi}{3}$ · The council's preliminary key

Q887 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

If θ is in the interval $\left(0,\frac{\pi}{2}\right)$ satisfying the equation $\cos 2\theta\cdot\sec^4\theta+\sec^2\theta=0$ then $\sin^2\theta=$

(A) $\frac{1}{3}$
(B) $\frac{3}{4}$
(C) $\frac{1}{2}$
(D) $\frac{2}{3}$

Answer: (D) $\frac{2}{3}$ · The council's preliminary key

Q888 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

In ΔABC, if $a\cos^2\frac{C}{2}+c\cos^2\frac{A}{2}=\frac{3b}{2}$, then

(A) $2b=a+c$
(B) $b^2=ac$
(C) $\frac{1}{b}=\frac{1}{a}+\frac{1}{c}$
(D) $a=c$

Answer: (A) $2b=a+c$ · The council's preliminary key

Q889 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

If s is the semi-perimeter of ΔABC and if $\frac{s-a}{4}=\frac{s-b}{5}=\frac{s-c}{6}$, then $\sum\sin^2\left(\frac{A}{2}\right)=$

(A) $\frac{74}{25}$
(B) $\frac{25}{74}$
(C) $\frac{74}{33}$
(D) $\frac{25}{33}$

Answer: (D) $\frac{25}{33}$ · The council's preliminary key

Q890 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

If I is the incentre of ΔABC and P_1, P_2, P_3 are respectively the radii of the circumcircles of the triangles IBC, ICA and IAB, then $P_1P_2P_3 =$

(A) $2Rr$
(B) $2Rr^2$
(C) $2R^2r$
(D) $\frac{4R}{r}$

Answer: (C) $2R^2r$ · The council's preliminary key

Q891 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

$\cos^3 110^\circ + \cos^3 10^\circ + \cos^3 130^\circ =$

(A) $\frac{3}{4}$
(B) $\frac{3}{8}$
(C) $\frac{3\sqrt{3}}{8}$
(D) $\frac{3\sqrt{3}}{4}$

Answer: (C) $\frac{3\sqrt{3}}{8}$ · The council's preliminary key

Q892 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

If the general solution of $\sin 5x = \cos 2x$ is of the form $a_n \cdot \frac{\pi}{2}$ for $n = 0, \pm1, \pm2, \ldots$, then $a_n =$

(A) $\frac{2n}{5+2(-1)^n}$
(B) $\frac{2n+(-1)^n}{5+2(-1)^n}$
(C) $\frac{2n+1}{5+2(-1)^n}$
(D) $\frac{2n-1}{5+2(-1)^n}$

Answer: (B) $\frac{2n+(-1)^n}{5+2(-1)^n}$ · The council's preliminary key

Q893 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

let x, y be real numbers such that $x \neq y$ and $xy \neq 1$. If $ax + b\sec(\mathrm{Tan}^{-1}x) = c$ and $ay + b\sec(\mathrm{Tan}^{-1}y) = c$, then $\frac{x+y}{1-xy} =$

(A) $\frac{2ab}{a^2-b^2}$
(B) $\frac{2ac}{a^2+c^2}$
(C) $\frac{2ab}{a^2+b^2}$
(D) $\frac{2ac}{a^2-c^2}$

Answer: (D) $\frac{2ac}{a^2-c^2}$ · The council's preliminary key

Q894 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

If the median of a ΔABC through A is perpendicular to AC, then $\frac{\tan A}{\tan C} =$

(A) $1+\sqrt{2}$
(B) $-\frac{1}{\sqrt{3}}+1$
(C) -2
(D) $1+\frac{2}{\sqrt{3}}$

Answer: (C) -2 · The council's preliminary key

Q895 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

In ΔABC, $\tan\frac{A}{2}+\tan\frac{B}{2} =$

(A) $\frac{c\cot\frac{C}{2}}{4s}$
(B) $\frac{2c\cot\frac{C}{2}}{a+b+c}$
(C) $\frac{2c\tan\frac{C}{2}}{s}$
(D) $\frac{c\tan\frac{C}{2}}{a+b+c}$

Answer: (B) $\frac{2c\cot\frac{C}{2}}{a+b+c}$ · The council's preliminary key

Q896 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

In a ΔABC, D, E and F respectively are the points of contact of the incircle with the sides AB, BC and CA such that $AD=\alpha$, $BE=\beta$ and $CF=\gamma$, then $\frac{\alpha\beta\gamma}{\alpha+\beta+\gamma} =$

(A) R^2
(B) $2R$
(C) $2r$
(D) r^2

Answer: (D) r^2 · The council's preliminary key

Q897 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

If $\tan\left(\frac{\pi}{4}+\frac{y}{2}\right)=\tan^3\left(\frac{\pi}{4}+\frac{x}{2}\right)$, then $\frac{3\sin x+\sin^3 x}{1+3\sin^2 x} =$

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(A) 0

(B) 1

(C) $\sin 2y$

(D) $\sin y$

Answer: (D) $\sin y$ · The council's preliminary key

Q898 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

$(\cos 252^\circ - \sin 126^\circ)(\cos 252^\circ + \sin 126^\circ)(\sin^2 126^\circ + \sin^2 186^\circ + \sin^2 66^\circ) =$

(A) $\frac{3\sqrt{5}}{8}$

(B) $\frac{-3\sqrt{5}}{8}$

(C) $\frac{-3\sqrt{5}}{4}$

(D) $\frac{3\sqrt{5}}{4}$

Answer: (B) $\frac{-3\sqrt{5}}{8}$ · The council's preliminary key

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Q899 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

If α, β, γ are any three angles, then $\cos\alpha + \cos\beta - \cos\gamma - \cos(\alpha+\beta+\gamma) =$

(A) $4\cos\frac{\alpha+\beta}{2}\cos\frac{\beta+\gamma}{2}\cos\frac{\gamma+\alpha}{2}$

(B) $4\cos\frac{\alpha+\beta}{2}\sin\frac{\beta+\gamma}{2}\sin\frac{\gamma+\alpha}{2}$

(C) $4\cos\frac{\alpha+\beta}{2}\sin\frac{\beta-\gamma}{2}\sin\frac{\gamma-\alpha}{2}$

(D) $4\sin\frac{\alpha+\beta}{2}\cos\frac{\beta+\gamma}{2}\cos\frac{\gamma+\alpha}{2}$

Answer: (B) $4\cos\frac{\alpha+\beta}{2}\sin\frac{\beta+\gamma}{2}\sin\frac{\gamma+\alpha}{2}$ · The council's preliminary key

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Q900 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

The general solution of the equation $\sqrt{3 - 5\sin x + \sin^2 x} + \cos x = 0$ is

(A) $n\pi + (-1)^n \frac{\pi}{6},\ n \in Z$

(B) $2n\pi \pm \frac{\pi}{6},\ n \in Z$

(C) $(2n+1)\pi - \frac{\pi}{6},\ n \in Z$

(D) $2n\pi \pm \frac{5\pi}{6},\ n \in Z$

Answer: (C) $(2n+1)\pi - \frac{\pi}{6},\ n \in Z$ · The council's preliminary key

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Q901 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

Consider the following statements:

I. In triangle ABC, if $c = 6$ and $\cos C = \frac{-11}{25}$ then $R = \frac{25}{2\sqrt{14}}$

II. In triangle ABC, if $a = 3, b = 4, c = 6$, then ABC is acute angled triangle.

Which of the above statements is/are true?

(A) only I
(B) only II
(C) Both I and II
(D) Neither I nor II

Answer: (A) only I · The council's preliminary key

Q902 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

In triangle ABC, if $a = 3, b = 4, c = 6$, then $\frac{\cot\frac{A}{2} + \cot\frac{B}{2} + \cot\frac{C}{2}}{\cot A + \cot B + \cot C} =$

(A) $\frac{13}{61}$
(B) $\frac{169}{61}$
(C) $\frac{61}{169}$
(D) $\frac{61}{13}$

Answer: (B) $\frac{169}{61}$ · The council's preliminary key

Q903 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

If the reciprocals of the lengths of the sides of a ΔABC are in harmonic progression, then its exradii r_1, r_2, r_3 are in

(A) Arithmetic progression
(B) Geometric progression
(C) Harmonic progression
(D) Arithmetico-geometric progression

Answer: (C) Harmonic progression · The council's preliminary key

Q904 TS EAMCET 2017 · 12 May · Offline MCQ

If $\tan 20^\circ = \lambda$, then $\frac{\tan 160^\circ - \tan 110^\circ}{1 + (\tan 160^\circ)(\tan 110^\circ)} =$

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(A) $\frac{1+\lambda^2}{2\lambda}$
(B) $\frac{1+\lambda^2}{\lambda}$
(C) $\frac{1-\lambda^2}{\lambda}$
(D) $\frac{1-\lambda^2}{2\lambda}$

Answer: (D) $\frac{1-\lambda^2}{2\lambda}$ · The council's preliminary key

Q905 TS EAMCET 2017 · 12 May · Offline MCQ

If $\operatorname{cosec}\theta - \cot\theta = 2017$, then quadrant in which θ lies is

(A) I
(B) IV
(C) III
(D) II

Answer: (D) II · The council's preliminary key

Q906 TS EAMCET 2017 · 12 May · Offline MCQ

The sides of a triangle are in the ratio $1 : \sqrt{3} : 2$. Then the angles are in the ratio

(A) $1 : 2 : 3$
(B) $1 : 2 : 4$
(C) $1 : 4 : 5$
(D) $1 : 3 : 5$

Answer: (A) $1 : 2 : 3$ · The council's preliminary key

Q907 TS EAMCET 2017 · 12 May · Offline MCQ

If $\tan\theta_1 = k\cot\theta_2$, then $\frac{\cos(\theta_1+\theta_2)}{\cos(\theta_1-\theta_2)} =$

(A) $\frac{1+k}{1-k}$
(B) $\frac{1-k}{1+k}$
(C) $\frac{k+1}{k-1}$
(D) $\frac{k-1}{k+1}$

Answer: (B) $\frac{1-k}{1+k}$ · The council's preliminary key

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Q908 TS EAMCET 2017 · 12 May · Offline MCQ

In $\triangle ABC$, if $a = 1$, $b = 2$, $\angle C = 60^\circ$ then $4\Delta^2 + c^2 =$

(A) 6
(B) 3
(C) $\frac{\sqrt{3}}{2}$
(D) 9

Answer: (A) 6 · The council's preliminary key

Q909 TS EAMCET 2017 · 12 May · Offline MCQ

The number of solutions of $\cos 2\theta = \sin\theta$ in $(0, 2\pi)$ is

(A) 4
(B) 3
(C) 2
(D) 5

Answer: (B) 3 · The council's preliminary key

Q910 TS EAMCET 2017 · 12 May · Offline MCQ

The lengths of the sides of a triangle are 13, 14 and 15. If R and r respectively denote the circum radius and inradius of that triangle, then $8R + r =$

(A) 84
(B) $\frac{65}{8}$
(C) 4
(D) 69

Answer: (D) 69 · The council's preliminary key

Q911 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

If $\tan\alpha$ and $\tan\beta$ are the roots of the equation $x^2 + px + q = 0$, then the value of $\sin^2(\alpha+\beta) + p\cos(\alpha+\beta)\sin(\alpha+\beta) + q\cos^2(\alpha+\beta)$ is

(A) $p + q$
(B) p
(C) q
(D) $\frac{p}{p+q}$

Answer: (C) q · The council's preliminary key

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Q912 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

$1 + \cos 10^\circ + \cos 20^\circ + \cos 30^\circ =$

(A) $4 \cos 5^\circ \cos 10^\circ \cos 15^\circ$

(B) $4 \cos 10^\circ \cos 20^\circ \cos 30^\circ$

(C) $4 \sin 5^\circ \sin 10^\circ \sin 15^\circ$

(D) $4 \sin 10^\circ \sin 20^\circ \sin 30^\circ$

Answer: (A) $4 \cos 5^\circ \cos 10^\circ \cos 15^\circ$ · The council's preliminary key

Q913 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

The number of solutions of the trigonometric equation $1 + \cos x \cdot \cos 5x = \sin^2 x$ in $[0, 2\pi]$ is

(A) 6

(B) 8

(C) 10

(D) 12

Answer: (C) 10 · The council's preliminary key

Q914 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

In $\triangle ABC$ if θ is any angle, then $b \cos(C + \theta) + c \cos(B - \theta) =$

(A) $a \cos \theta$

(B) $a \sin \theta$

(C) $a \tan \theta$

(D) $a \cot \theta$

Answer: (A) $a \cos \theta$ · The council's preliminary key

Q915 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

In $\triangle ABC$, if $b \cos \theta = c - a$, (where θ is an acute angle), then $(c - a) \tan \theta =$

(A) $2\sqrt{ca} \cos \dfrac{B}{2}$

(B) $2\sqrt{ca} \sin \dfrac{B}{2}$

(C) $2ca \sin \dfrac{B}{2}$

(D) $2ca \cos \dfrac{B}{2}$

Answer: (B) $2\sqrt{ca} \sin \dfrac{B}{2}$ · The council's preliminary key

Q916 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

If α, β, γ are the lengths of the tangents from the vertices of a triangle to its in-circle, then

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(A) $\alpha+\beta+\gamma=\frac{1}{r^2}(\alpha\beta\gamma)$

(B) $\alpha+\beta+\gamma=\frac{1}{r}(\alpha\beta\gamma)$

(C) $\alpha^2+\beta^2+\gamma^2=\frac{2}{r}(\alpha\beta\gamma)$

(D) $\frac{1}{\alpha}+\frac{1}{\beta}+\frac{1}{\gamma}=r(\alpha\beta\gamma)$

Answer: (A) $\alpha+\beta+\gamma=\frac{1}{r^2}(\alpha\beta\gamma)$ · The council's preliminary key

Q917 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

$\sin^4\frac{\pi}{8}+\cos^4\frac{\pi}{8}+\sin^4\frac{3\pi}{8}+\cos^4\frac{3\pi}{8}+\sin^4\frac{5\pi}{8}+\cos^4\frac{5\pi}{8}+\sin^4\frac{7\pi}{8}+\cos^4\frac{7\pi}{8}=$

(A) 3

(B) $\frac{3}{2}$

(C) 4

(D) 8

Answer: (A) 3 · The council's preliminary key

Q918 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

$\cos 12^\circ+\cos 60^\circ+\cos 84^\circ+\cos 132^\circ+\cos 156^\circ=$

(A) $\frac{-1}{4}$

(B) $\frac{-1}{2}$

(C) 0

(D) $\frac{1}{4}$

Answer: (C) 0 · The council's preliminary key

Q919 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

If $\sin(270^\circ-x^\circ)=\cos 292^\circ$ then a value of x is

(A) 120

(B) 60

(C) 113

(D) 112

Answer: (D) 112 · The council's preliminary key

Q920 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

In Δ ABC, if $a:b:c=4:5:6$, then $\cos A:\cos B:\cos C=$

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(A) 12:9:2
(B) 6:5:4
(C) 7:8:9
(D) 14:11:6

Answer: (A) 12:9:2 · The council's preliminary key

Q921 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

In a triangle ABC, if $\tan\left(\frac{A-B}{2}\right)=\frac{1}{3}\tan\left(\frac{A+B}{2}\right)$ then $a:b=$

(A) 2:1
(B) 3:1
(C) 4:1
(D) 1:3

Answer: (A) 2:1 · The council's preliminary key

Q922 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

In a triangle ABC if $2r_1=3r_2=r_3$ then $a:b:c=$

(A) 4:3:5
(B) 3:4:5
(C) 5:3:4
(D) 3:5:4

Answer: (A) 4:3:5 · The council's preliminary key

Q923 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

$\cos 20^\circ+\cos 30^\circ+\cos 40^\circ=$

(A) $1-2\sin 10^\circ\sin 15^\circ\sin 20^\circ$
(B) $4\cos 20^\circ\cos 30^\circ\cos 40^\circ$
(C) $4\cos 10^\circ\cos 15^\circ\cos 20^\circ$
(D) $4\cos 25^\circ\cos 30^\circ\cos 35^\circ$

Answer: (D) $4\cos 25^\circ\cos 30^\circ\cos 35^\circ$ · The council's preliminary key

Q924 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

$\cos\frac{2\pi}{15}\cos\frac{4\pi}{15}\cos\frac{8\pi}{15}\cos\frac{14\pi}{15}=$

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(A) $\frac{9}{16}$
(B) $\frac{1}{8}$
(C) $\frac{1}{16}$
(D) $\frac{1}{24}$

Answer: (C) $\frac{1}{16}$ · The council's preliminary key

Q925 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

If $0 \leq x \leq 2\pi$, then the number of real values of x, which satisfy the equation $\sin x + \sin 2x + \sin 3x + \sin 4x = 0$ is

(A) 9
(B) 7
(C) 3
(D) 5

Answer: (A) 9 · The council's preliminary key

Q926 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

If the lengths of two sides of a triangle are the roots of the equation $x^2 - 2\sqrt{3}x + 2 = 0$ and the angle between these sides is $\frac{\pi}{3}$, then the perimeter of the triangle is

(A) $2\sqrt{6} + \sqrt{3}$
(B) $2\sqrt{6} + 2\sqrt{3}$
(C) $\sqrt{6} + 2\sqrt{3}$
(D) $\sqrt{6} + \sqrt{3}$

Answer: (C) $\sqrt{6} + 2\sqrt{3}$ · The council's preliminary key

Q927 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

In $\triangle ABC$ if $\angle C = 90^\circ$, then $\frac{(\sin^2 A + \sin^2 B)}{(\sin^2 A - \sin^2 B)} \sin(A - B) =$

(A) 1
(B) $\frac{1}{2}$
(C) $\frac{\sqrt{3}}{2}$
(D) 0

Answer: (A) 1 · The council's preliminary key

Q928 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

In $\triangle ABC$ if $r_1 = 8$, $r_2 = 12$ and $r_3 = 24$ then the ordered triple $(a, b, c) =$

(A) $(8, 12, 14)$
(B) $(12, 16, 20)$
(C) $(16, 12, 20)$
(D) $(16, 20, 12)$

Answer: (B) $(12, 16, 20)$ · The council's preliminary key

Q929 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

The value of $\cot 70^\circ + 4\cos 70^\circ$ is

(A) $\frac{1}{\sqrt{3}}$
(B) $\sqrt{3}$
(C) $2\sqrt{3}$
(D) $\frac{1}{2}$

Answer: (B) $\sqrt{3}$ · The council's preliminary key

Q930 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

$$\frac{\sqrt{2} - \sin\alpha - \cos\alpha}{\sin\alpha - \cos\alpha} =$$

(A) $\sec\left(\frac{\alpha}{2} - \frac{\pi}{8}\right)$
(B) $\cos\left(\frac{\pi}{8} - \frac{\alpha}{2}\right)$
(C) $\tan\left(\frac{\alpha}{2} - \frac{\pi}{8}\right)$
(D) $\cot\left(\frac{\alpha}{2} - \frac{\pi}{2}\right)$

Answer: (C) $\tan\left(\frac{\alpha}{2} - \frac{\pi}{8}\right)$ · The council's preliminary key

Q931 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

If $\sin(x + 3\alpha) + 3\sin(x - \alpha) = 0$, then

(A) $\tan x = \tan\alpha$
(B) $\tan x = \tan^2\alpha$
(C) $\tan x = \tan^3\alpha$
(D) $\tan x = 3\tan\alpha$

Answer: (C) $\tan x = \tan^3\alpha$ · The council's preliminary key

Q932 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

If $\cot\frac{x}{2} - \operatorname{cosec}\frac{x}{2} = \cot x$, then the values of x are

(A) $2n\pi$

(B) $4n\pi \pm \frac{2\pi}{3}$

(C) $2n\pi \pm \frac{\pi}{3}$

(D) $n\pi$

Answer: (B) $4n\pi \pm \frac{2\pi}{3}$ · The council's preliminary key

Q933 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

In $\triangle ABC$ if $a = 2b$ and $|A - B| = \frac{\pi}{3}$, then $\angle C =$

(A) $\frac{\pi}{6}$

(B) $\frac{\pi}{3}$

(C) $\frac{\pi}{2}$

(D) $\frac{\pi}{4}$

Answer: (B) $\frac{\pi}{3}$ · The council's preliminary key

Q934 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

The base of a triangle is 80 and one of the base angles is $60°$. If the sum of the lengths of the other two sides is 90, then the shortest side is of length

(A) 15

(B) 21

(C) 19

(D) 17

Answer: (D) 17 · The council's preliminary key

Q935 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

In $\triangle ABC$, if $r_1 = 3$, $r_2 = 10$ and $r_3 = 15$, then $R =$

(A) 5

(B) 12

(C) $\frac{13}{2}$

(D) 13

Answer: (C) $\frac{13}{2}$ · The council's preliminary key

Q936 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

$\cos^4 \frac{\pi}{12} + \cos^4 \frac{5\pi}{12} + \cos^4 \frac{7\pi}{12} + \cos^4 \frac{11\pi}{12} =$

(A) 2

(B) 1

(C) $\frac{7}{4}$

(D) $\frac{3}{2}$

Answer: (C) $\frac{7}{4}$ · The council's preliminary key

Q937 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

If $\frac{\tan(\alpha+\beta-\gamma)}{\tan(\alpha-\beta+\gamma)} = \frac{\tan\gamma}{\tan\beta}$ and $\beta \neq \gamma$, then the value of $\sin 2\alpha + \sin 2\beta + \sin 2\gamma$ is

(A) 0

(B) 1

(C) 2

(D) $\frac{1}{2}$

Answer: (A) 0 · The council's preliminary key

Q938 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

$1 + \cos^2\theta = 3\sin\theta\cos\theta \Rightarrow \theta =$

(A) $n\pi + \frac{\pi}{4},\ n\pi - \text{Tan}^{-1}\left(\frac{1}{2}\right);\ n \in \mathbb{Z}$

(B) $n\pi - \frac{\pi}{4},\ n\pi + \text{Tan}^{-1}2;\ n \in \mathbb{Z}$

(C) $n\pi + \frac{\pi}{4},\ n\pi + \text{Tan}^{-1}2;\ n \in \mathbb{Z}$

(D) $n\pi - \frac{\pi}{4},\ n\pi + \text{Tan}^{-1}\left(\frac{1}{2}\right);\ n \in \mathbb{Z}$

Answer: (C) $n\pi + \frac{\pi}{4},\ n\pi + \text{Tan}^{-1}2;\ n \in \mathbb{Z}$ · The council's preliminary key

Q939 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

In ΔABC, if A:B:C = 5:1:6 then a:b:c =

(A) $\sqrt{2}+1 : \sqrt{2}-1 : 2\sqrt{2}$

(B) $\sqrt{3}-1 : \sqrt{3}+1 : 2\sqrt{2}$

(C) $\sqrt{3}+1 : \sqrt{3}-1 : 2\sqrt{2}$

(D) $\sqrt{3}-1 : \sqrt{3}+1 : 1$

Answer: (C) $\sqrt{3}+1 : \sqrt{3}-1 : 2\sqrt{2}$ · The council's preliminary key

Q940 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

In any triangle ABC

$a \cdot \cos^2\frac{A}{2} + b \cdot \cos^2\frac{B}{2} + c \cdot \cos^2\frac{C}{2} =$

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(A) $\frac{\Delta}{R}$
(B) $s+\frac{\Delta}{R}$
(C) $2s+\frac{\Delta}{R}$
(D) $\frac{\Delta s}{R}$

Answer: (B) $s+\frac{\Delta}{R}$ · The council's preliminary key

Q941 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

If $R=\frac{65}{8}$, $r_1=\frac{21}{2}$ and $r_2=12$ are the circum radius, radii of the excircles opposite to the vertices A and B of a triangle ABC respectively, then the area of the triangle (in square units) is

(A) $\frac{2}{3}$
(B) 28
(C) 84
(D) 168

Answer: (C) 84 · The council's preliminary key

Q942 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

Among the following functions defined on $\mathbb{R}$ into $\mathbb{R}$, the constant function is

(A) $\frac{3}{5+4\sin 3x}$
(B) $\frac{1}{2-\cos 3x}$
(C) $\cos^2 x+\cos^2\left(x+\frac{\pi}{3}\right)+\sin x\cdot\sin\left(x+\frac{\pi}{3}\right)$
(D) $\frac{15}{3\sin x+4\cos x+10}$

Answer: (C) $\cos^2 x+\cos^2\left(x+\frac{\pi}{3}\right)+\sin x\cdot\sin\left(x+\frac{\pi}{3}\right)$ · The council's preliminary key

Q943 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

If $\cos\alpha+\cos\beta=a$, $\sin\alpha+\sin\beta=b$ and $\alpha-\beta=2\theta$, then $\frac{\cos 3\theta}{\cos\theta}=$

(A) a^2+b^2-2
(B) a^2+b^2-3
(C) $3-a^2-b^2$
(D) $\frac{a^2+b^2}{4}$

Answer: (B) a^2+b^2-3 · The council's preliminary key

Q944 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

$\cos^3\theta+\cos^3(120^\circ+\theta)+\cos^3(\theta-120^\circ)=$

(A) $\frac{\sqrt{3}}{2}\cos\theta$
(B) $\frac{3}{4}\sec^3\theta$
(C) $\frac{3}{2}\tan^3\theta$
(D) $\frac{3}{4}\cos 3\theta$

Answer: (D) $\frac{3}{4}\cos 3\theta$ · The council's preliminary key

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Q945 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

The general solution of the trigonometric equation $(\sqrt{3}-1)\sin\theta+(\sqrt{3}+1)\cos\theta=2$ is

(A) $2n\pi\pm\frac{\pi}{4}+\frac{\pi}{12}$
(B) $n\pi+(-1)^n\frac{\pi}{4}+\frac{\pi}{12}$
(C) $2n\pi\pm\frac{\pi}{4}-\frac{\pi}{12}$
(D) $n\pi+(-1)^n\frac{\pi}{4}-\frac{\pi}{12}$

Answer: (A) $2n\pi\pm\frac{\pi}{4}+\frac{\pi}{12}$ · The council's preliminary key

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Q946 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

In ΔABC, if $a=2(\sqrt{3}+1)$, $B=45^\circ$ and $C=60^\circ$, then the area (in sq.units) of that triangle is

(A) $2\sqrt{3}$
(B) 6
(C) $6+2\sqrt{3}$
(D) $6-2\sqrt{3}$

Answer: (C) $6+2\sqrt{3}$ · The council's preliminary key

Q947 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

The equation $x^2-2\sqrt{3}x+2=0$ represents two sides of a triangle. If the angle between them is $\frac{\pi}{3}$, then the perimeter of that triangle is

(A) $2\sqrt{3}+6$
(B) $2\sqrt{3}+\sqrt{6}$
(C) $3\sqrt{2}+6$
(D) $3\sqrt{2}+\sqrt{6}$

Answer: (B) $2\sqrt{3}+\sqrt{6}$ · The council's preliminary key

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Q948 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

In ΔABC, if $b=2$, $c=\sqrt{3}$, $\angle A=30^\circ$, then its inradius $r=$

(A) $\sqrt{3}-1$
(B) $\sqrt{3}+1$
(C) $\frac{\sqrt{3}+1}{2}$
(D) $\frac{\sqrt{3}-1}{2}$

Answer: (D) $\frac{\sqrt{3}-1}{2}$ · The council's preliminary key

Q949 TS EAMCET 2016 · 15 May · Offline MCQ

If $\cos^3\theta+\cos^3\left(\frac{2\pi}{3}+\theta\right)+\cos^3\left(\frac{4\pi}{3}+\theta\right)=a\cos 3\theta$, then $a=$

(A) $\frac{1}{4}$
(B) $\frac{3}{4}$
(C) $\frac{5}{4}$
(D) $\frac{7}{4}$

Answer: (B) $\frac{3}{4}$ · Official TGCHE final key

Q950 TS EAMCET 2016 · 15 May · Offline MCQ

$\frac{\cos 13^\circ-\sin 13^\circ}{\cos 13^\circ+\sin 13^\circ}+\frac{1}{\cot 148^\circ}=$

(A) 1
(B) -1
(C) 0
(D) $\frac{1}{2}$

Answer: (C) 0 · Official TGCHE final key

Q951 TS EAMCET 2016 · 15 May · Offline MCQ

If $\cos x+\cos y+\cos\alpha=0$ and $\sin x+\sin y+\sin\alpha=0$, then $\cot\left(\frac{x+y}{2}\right)=$

(A) $\sin\alpha$
(B) $\cos\alpha$
(C) $\tan\alpha$
(D) $\cot\alpha$

Answer: (D) $\cot\alpha$ · Official TGCHE final key

Q952 TS EAMCET 2016 · 15 May · Offline MCQ

If $f(x)=\cos^2 x+\cos^2 2x+\cos^2 3x$, then the number of values of $x\in[0,2\pi]$ for which $f(x)=1$ is

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(A) 4
(B) 6
(C) 8
(D) 10

Answer: (D) 10 · Official TGCHE final key

Q953 TS EAMCET 2016 · 15 May · Offline MCQ

If $\triangle ABC$ is such that $\angle A = 90^\circ$, $\angle B \neq \angle C$, then $\frac{b^2+c^2}{b^2-c^2}\sin(B-C) =$

(A) $\frac{1}{3}$
(B) $\frac{1}{2}$
(C) 1
(D) $\frac{3}{2}$

Answer: (C) 1 · Official TGCHE final key

Q954 TS EAMCET 2016 · 15 May · Offline MCQ

In $\triangle ABC$, if $8R^2 = a^2 + b^2 + c^2$, then the triangle is a

(A) right angled triangle
(B) equilateral triangle
(C) scalene triangle
(D) obtuse angled triangle

Answer: (A) right angled triangle · Official TGCHE final key

Q955 TS EAMCET 2016 · 15 May · Offline MCQ

In $\triangle ABC$, if $2R + r = r_2$, then $\angle B =$

(A) $\frac{\pi}{3}$
(B) $\frac{\pi}{4}$
(C) $\frac{\pi}{6}$
(D) $\frac{\pi}{2}$

Answer: (D) $\frac{\pi}{2}$ · Official TGCHE final key

Q956 AP EAMCET 2016 · 29 Apr · Offline MCQ

If $(1+\tan\alpha)(1+\tan 4\alpha) = 2$, $\alpha \in \left(0, \frac{\pi}{16}\right)$, then $\alpha =$

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(A) $\frac{\pi}{20}$
(B) $\frac{\pi}{30}$
(C) $\frac{\pi}{40}$
(D) $\frac{\pi}{60}$

Answer: (A) $\frac{\pi}{20}$ · The council's preliminary key

Q957 AP EAMCET 2016 · 29 Apr · Offline MCQ

If $\cos\theta = \frac{\cos\alpha - \cos\beta}{1 - \cos\alpha\cos\beta}$, then one of the values of $\tan\left(\frac{\theta}{2}\right)$ is

(A) $\cot\frac{\beta}{2}\tan\frac{\alpha}{2}$
(B) $\tan\alpha\tan\frac{\beta}{2}$
(C) $\tan\frac{\beta}{2}\cot\frac{\alpha}{2}$
(D) $\tan^2\frac{\alpha}{2}\tan^2\frac{\beta}{2}$

Answer: (A) $\cot\frac{\beta}{2}\tan\frac{\alpha}{2}$ · The council's preliminary key

Q958 AP EAMCET 2016 · 29 Apr · Offline MCQ

The value of the expression
$\frac{1+\sin 2\alpha}{\cos(2\alpha - 2\pi)\tan\left(\alpha - \frac{3\pi}{4}\right)} - \frac{1}{4}\sin 2\alpha\left(\cot\frac{\alpha}{2} + \cot\left(\frac{3\pi}{2} + \frac{\alpha}{2}\right)\right)$ is

(A) 0
(B) 1
(C) $\sin^2\frac{\alpha}{2}$
(D) $\sin^2\alpha$

Answer: (D) $\sin^2\alpha$ · The council's preliminary key

Q959 AP EAMCET 2016 · 29 Apr · Offline MCQ

If $\frac{1}{6}\sin\theta, \cos\theta$ and $\tan\theta$ are in geometric progression, then the solution set of θ is

(A) $2n\pi \pm \left(\frac{\pi}{6}\right)$
(B) $2n\pi \pm \left(\frac{\pi}{3}\right)$
(C) $n\pi + (-1)^n \left(\frac{\pi}{3}\right)$
(D) $n\pi + \left(\frac{\pi}{3}\right)$

Answer: (B) $2n\pi \pm \left(\frac{\pi}{3}\right)$ · The council's preliminary key

Q960 AP EAMCET 2016 · 29 Apr · Offline MCQ

In ΔABC, if $x = \tan\left(\frac{B-C}{2}\right)\tan\frac{A}{2}$, $y = \tan\left(\frac{C-A}{2}\right)\tan\frac{B}{2}$ and $z = \tan\left(\frac{A-B}{2}\right)\tan\frac{C}{2}$, then $(x+y+z) =$

(A) xyz
(B) $-xyz$
(C) $2xyz$
(D) $\frac{1}{2}xyz$

Answer: (B) $-xyz$ · The council's preliminary key

Q961 AP EAMCET 2016 · 29 Apr · Offline MCQ

In ΔABC, if the sides a, b, c are in geometric progression and the largest angle exceeds the smallest angle by 60°, then $\cos B =$

(A) $\frac{\sqrt{13}+1}{4}$
(B) $\frac{1-\sqrt{13}}{4}$
(C) 1
(D) $\frac{\sqrt{13}-1}{4}$

Answer: (D) $\frac{\sqrt{13}-1}{4}$ · The council's preliminary key

Q962 AP EAMCET 2016 · 29 Apr · Offline MCQ

In a ΔABC if $\angle A = 90^\circ$, then $\cos^{-1}\left(\frac{R}{r_2+r_3}\right)$ is equal to

(A) 90°
(B) 30°
(C) 60°
(D) 45°

Answer: (C) 60° · The council's preliminary key

Q963 AP EAMCET 2016 · 29 Apr · Offline MCQ

If $A > 0, B > 0$ and $A + B = \frac{\pi}{3}$, then the maximum value of $\tan A \tan B$ is

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(A) $\frac{1}{\sqrt{3}}$
(B) $\frac{1}{3}$
(C) $\frac{1}{2}$
(D) $\sqrt{3}$

Answer: (B) $\frac{1}{3}$ · The council's preliminary key

Q964 AP EAMCET 2014 · 22 May · Offline MCQ

If $\cos x = \tan y$, $\cot y = \tan z$ and $\cot z = \tan x$; then $\sin x =$

(A) $\frac{\sqrt{5}+1}{4}$
(B) $\frac{\sqrt{5}-1}{4}$
(C) $\frac{\sqrt{5}+1}{2}$
(D) $\frac{\sqrt{5}-1}{2}$

Answer: (D) $\frac{\sqrt{5}-1}{2}$ · The council's preliminary key

Q965 AP EAMCET 2014 · 22 May · Offline MCQ

$\tan 81^\circ - \tan 63^\circ - \tan 27^\circ + \tan 9^\circ =$

(A) 6
(B) 0
(C) 2
(D) 4

Answer: (D) 4 · The council's preliminary key

Q966 AP EAMCET 2014 · 22 May · Offline MCQ

If x and y are acute angles such that $\cos x + \cos y = \frac{3}{2}$ and $\sin x + \sin y = \frac{3}{4}$ then $\sin(x+y) =$

(A) $\frac{2}{5}$
(B) $\frac{3}{4}$
(C) $\frac{3}{5}$
(D) $\frac{4}{5}$

Answer: (D) $\frac{4}{5}$ · The council's preliminary key

Q967 AP EAMCET 2014 · 22 May · Offline MCQ

The sum of the solutions in $(0, 2\pi)$ of the equation $\cos x \cos\left(\frac{\pi}{3} - x\right) \cos\left(\frac{\pi}{3} + x\right) = \frac{1}{4}$ is

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(A) 4π
(B) π
(C) 2π
(D) 3π

Answer: (C) 2π · The council's preliminary key

Q968 AP EAMCET 2014 · 22 May · Offline MCQ

In any ΔABC, $\frac{(a+b+c)(b+c-a)(c+a-b)(a+b-c)}{4b^2c^2} =$

(A) $\sin^2 B$
(B) $\cos^2 A$
(C) $\cos^2 B$
(D) $\sin^2 A$

Answer: (D) $\sin^2 A$ · The council's preliminary key

Q969 AP EAMCET 2014 · 22 May · Offline MCQ

If in a triangle ABC, $r_1 = 2$, $r_2 = 3$ and $r_3 = 6$ then $a =$

(A) 4
(B) 1
(C) 2
(D) 3

Answer: (D) 3 · The council's preliminary key

Q970 AP EAMCET 2014 · 22 May · Offline MCQ

If the angles of a triangle are in the ratio $1 : 1 : 4$ then the ratio of the perimeter of the triangle to its largest side is

(A) $\sqrt{2}+2 : \sqrt{3}$
(B) $3 : 2$
(C) $\sqrt{3}+2 : \sqrt{2}$
(D) $\sqrt{3}+2 : \sqrt{3}$

Answer: (D) $\sqrt{3}+2 : \sqrt{3}$ · The council's preliminary key

Q971 AP EAMCET 2013 · 10 May · Offline MCQ

$\sin\theta + \cos\theta = p$, $\sin^3\theta + \cos^3\theta = q \Rightarrow p(p^2-3) =$

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(A) q
(B) $2q$
(C) $-q$
(D) $-2q$

Answer: (D) $-2q$ · The council's preliminary key

Q972 AP EAMCET 2013 · 10 May · Offline MCQ

If $\tan(\pi\cos\theta) = \cot(\pi\sin\theta)$ then a value of $\cos\left(\theta - \frac{\pi}{4}\right)$ among the following is

(A) $\frac{1}{2\sqrt{2}}$
(B) $\frac{1}{\sqrt{2}}$
(C) $\frac{1}{2}$
(D) $\frac{1}{4}$

Answer: (A) $\frac{1}{2\sqrt{2}}$ · The council's preliminary key

Q973 AP EAMCET 2013 · 10 May · Offline MCQ

The set of solutions of the system of equations :
$x + y = \frac{2\pi}{3}$ and
$\cos x + \cos y = \frac{3}{2}$,
where x, y are real, is

(A) $\left\{(x,y) : \cos\left(\frac{x-y}{2}\right) = \frac{1}{2}\right\}$
(B) $\left\{(x,y) : \sin\left(\frac{x-y}{2}\right) = \frac{1}{2}\right\}$
(C) $\left\{(x,y) : \cos(x-y) = \frac{1}{2}\right\}$
(D) empty set

Answer: (D) empty set · The council's preliminary key

Q974 AP EAMCET 2013 · 10 May · Offline MCQ

In any triangle ABC,
$r_1r_2 + r_2r_3 + r_3r_1 =$

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(A) $\frac{\Delta^2}{r^2}$
(B) $\frac{\Delta}{r}$
(C) $\frac{2\Delta}{r}$
(D) Δ^2

Answer: (A) $\frac{\Delta^2}{r^2}$ · The council's preliminary key

Q975 AP EAMCET 2013 · 10 May · Offline MCQ

If, in ΔABC, $\frac{1}{a+c}+\frac{1}{b+c}=\frac{3}{a+b+c}$ then the angle $C=$

(A) 30°
(B) 45°
(C) 60°
(D) 90°

Answer: (C) 60° · The council's preliminary key

Q976 AP EAMCET 2013 · 10 May · Offline MCQ

A person observes the top of a tower from a point A on the ground. The elevation of the tower from this point is 60°. He moves 60 m in the direction perpendicular to the line joining A and base of the tower. The angle of elevation of the tower from this point is 45°. Then the height of the tower (in meters) is

(A) $60\sqrt{\frac{3}{2}}$
(B) $60\sqrt{2}$
(C) $60\sqrt{3}$
(D) $60\sqrt{\frac{2}{3}}$

Answer: (A) $60\sqrt{\frac{3}{2}}$ · The council's preliminary key

Q977 AP EAMCET 2012 · 12 May · Offline MCQ

In a triangle PQR, $\angle R=\frac{\pi}{4}$. If $\tan\left(\frac{P}{3}\right)$ and $\tan\left(\frac{Q}{3}\right)$ are the roots of the equation $ax^2+bx+c=0$, then

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(A) $a+b=c$
(B) $b+c=0$
(C) $a+c=b$
(D) $b=c$

Answer: (A) $a+b=c$ · Official APSCHE final key

Q978 AP EAMCET 2012 · 12 May · Offline MCQ

The minimum value of $27\tan^2\theta+3\cot^2\theta$ is

(A) 15
(B) 18
(C) 24
(D) 30

Answer: (B) 18 · Official APSCHE final key

Q979 AP EAMCET 2012 · 12 May · Offline MCQ

$\cos 36^\circ-\cos 72^\circ=$

(A) 1
(B) $\frac{1}{2}$
(C) $\frac{1}{4}$
(D) $\frac{1}{8}$

Answer: (B) $\frac{1}{2}$ · Official APSCHE final key

Q980 AP EAMCET 2012 · 12 May · Offline MCQ

$\tan x+\tan\left(x+\frac{\pi}{3}\right)+\tan\left(x+\frac{2\pi}{3}\right)=3\Rightarrow\tan 3x=$

(A) 3
(B) 2
(C) 1
(D) 0

Answer: (C) 1 · Official APSCHE final key

Q981 AP EAMCET 2012 · 12 May · Offline MCQ

$3\sin x+4\cos x=5\Rightarrow 6\tan\frac{x}{2}-9\tan^2\frac{x}{2}=$

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(A) 0
(B) 1
(C) 3
(D) 4

Answer: (B) 1 · Official APSCHE final key

Q982 AP EAMCET 2012 · 12 May · Offline MCQ

In an acute-angled triangle, $\cot B \cot C + \cot A \cot C + \cot A \cot B =$

(A) -1
(B) 0
(C) 1
(D) 2

Answer: (C) 1 · Official APSCHE final key

Q983 AP EAMCET 2012 · 12 May · Offline MCQ

If α, β, γ are lengths of the altitudes of a triangle ABC with area Δ, then $\frac{\Delta^2}{R^2}\left(\frac{1}{\alpha^2}+\frac{1}{\beta^2}+\frac{1}{\gamma^2}\right) =$

(A) $\sin^2 A + \sin^2 B + \sin^2 C$
(B) $\cos^2 A + \cos^2 B + \cos^2 C$
(C) $\tan^2 A + \tan^2 B + \tan^2 C$
(D) $\cot^2 A + \cot^2 B + \cot^2 C$

Answer: (A) $\sin^2 A + \sin^2 B + \sin^2 C$ · Official APSCHE final key

Q984 AP EAMCET 2012 · 12 May · Offline MCQ

A vertical pole subtends an angle $\tan^{-1}\left(\frac{1}{2}\right)$ at a point P on the ground. If the angles subtended by the upper half and the lower half of the pole at P are respectively α and β, then $(\tan\alpha, \tan\beta) =$

(A) $\left(\frac{1}{4}, \frac{1}{5}\right)$
(B) $\left(\frac{1}{5}, \frac{2}{9}\right)$
(C) $\left(\frac{2}{9}, \frac{1}{4}\right)$
(D) $\left(\frac{1}{4}, \frac{2}{9}\right)$

Answer: (C) $\left(\frac{2}{9}, \frac{1}{4}\right)$ · Official APSCHE final key

Q985 AP EAMCET 2011 · 8 May · Offline MCQ

$\cos A = \frac{3}{4} \Rightarrow 32 \sin\left(\frac{A}{2}\right) \sin\left(\frac{5A}{2}\right) =$

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(A) 7
(B) 8
(C) 13
(D) 11

Answer: (D) 11 · The council's preliminary key

Q986 AP EAMCET 2011 · 8 May · Offline MCQ

If $f(x) = \sin^6 x + \cos^6 x$ for $x \in \mathbb{R}$, then $f(x)$ lies in the interval

(A) $\left[\frac{7}{8}, \frac{5}{4}\right]$
(B) $\left[\frac{1}{2}, \frac{5}{8}\right]$
(C) $\left[\frac{1}{4}, 1\right]$
(D) $\left[\frac{1}{4}, \frac{1}{2}\right]$

Answer: (C) $\left[\frac{1}{4}, 1\right]$ · The council's preliminary key

Q987 AP EAMCET 2011 · 8 May · Offline MCQ

The most general value of θ which satisfies both the equations $\tan\theta = -1$ and $\cos\theta = \frac{1}{\sqrt{2}}$ is

(A) $n\pi + 7\frac{\pi}{4}$
(B) $2n\pi + \frac{7\pi}{4}$
(C) $n\pi + (-1)^n \frac{7\pi}{4}$
(D) $\frac{7n\pi}{4}$

Answer: (B) $2n\pi + \frac{7\pi}{4}$ · The council's preliminary key

Q988 AP EAMCET 2011 · 8 May · Offline MCQ

In a triangle ABC if $a\cos^2\frac{C}{2} + c\cos^2\frac{A}{2} = \frac{3b}{2}$, then the sides of the triangle are in

(A) an arithmetic progression
(B) a geometric progression
(C) a harmonic progression
(D) an arithmetico-geometric progression

Answer: (A) an arithmetic progression · The council's preliminary key

Q989 AP EAMCET 2011 · 8 May · Offline MCQ

In a triangle ABC if $\frac{\cos A}{a} = \frac{\cos B}{b} = \frac{\cos C}{c}$, then Δ ABC is

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(A) Right-angled
(B) Isosceles right-angled
(C) Equilateral
(D) Scalene

Answer: (C) Equilateral · The council's preliminary key

Q990 AP EAMCET 2011 · 8 May · Offline MCQ

The angle of elevation of a stationary cloud from a point 2500 m above a lake is 15° and from the same point the angle of depression of its reflection in the lake is 45°. The height (in meters) of the cloud above the lake, given that $\cot 15^\circ = 2 + \sqrt{3}$, is

(A) 2500
(B) $2500\sqrt{2}$
(C) $2500\sqrt{3}$
(D) 5000

Answer: (C) $2500\sqrt{3}$ · The council's preliminary key

Q991 AP EAMCET 2010 · 30 May · Offline MCQ

$a\sin^2\theta + b\cos^2\theta = c \Rightarrow \tan^2\theta =$

(A) $\dfrac{b-c}{a-c}$
(B) $\dfrac{c-b}{a-c}$
(C) $\dfrac{a-c}{b-c}$
(D) $\dfrac{a-c}{c-b}$

Answer: (B) $\dfrac{c-b}{a-c}$ · Official APSCHE final key

Q992 AP EAMCET 2010 · 30 May · Offline MCQ

If $\cos(x-y)$, $\cos x$, $\cos(x+y)$ are three distinct numbers which are in harmonic progression and $\cos x \neq \cos y$, then $1 + \cos y =$

(A) $\cos^2 x$
(B) $-\cos^2 x$
(C) $\cos^2 x - 1$
(D) $\cos^2 x - 2$

Answer: (A) $\cos^2 x$ · Official APSCHE final key

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Q993 AP EAMCET 2010 · 30 May · Offline MCQ

The set of solutions of the equation $(\sqrt{3}-1)\sin\theta+(\sqrt{3}+1)\cos\theta=2$ is :

(A) $\left\{2n\pi\pm\frac{\pi}{4}+\frac{\pi}{12}:n\in\mathbb{Z}\right\}$

(B) $\left\{2n\pi\pm\frac{\pi}{4}-\frac{\pi}{12}:n\in\mathbb{Z}\right\}$

(C) $\left\{n\pi+(-1)^n\frac{\pi}{4}+\frac{\pi}{12}:n\in\mathbb{Z}\right\}$

(D) $\left\{n\pi+(-1)^n\frac{\pi}{4}-\frac{\pi}{12}:n\in\mathbb{Z}\right\}$

Answer: (A) $\left\{2n\pi\pm\frac{\pi}{4}+\frac{\pi}{12}:n\in\mathbb{Z}\right\}$ · Official APSCHE final key

Q994 AP EAMCET 2010 · 30 May · Offline MCQ

If $\Delta=a^2-(b-c)^2$, is the area of the triangle ABC, then $\tan A=$

(A) $\frac{1}{16}$

(B) $\frac{8}{15}$

(C) $\frac{3}{4}$

(D) $\frac{4}{3}$

Answer: (B) $\frac{8}{15}$ · Official APSCHE final key

Q995 AP EAMCET 2010 · 30 May · Offline MCQ

In a triangle ABC, $\mathrm{C}=90^\circ$. Then $\frac{a^2-b^2}{a^2+b^2}=$

(A) $\sin(\mathrm{A}+\mathrm{B})$

(B) $\sin(\mathrm{A}-\mathrm{B})$

(C) $\cos(\mathrm{A}+\mathrm{B})$

(D) $\cos(\mathrm{A}-\mathrm{B})$

Answer: (B) $\sin(\mathrm{A}-\mathrm{B})$ · Official APSCHE final key

Q996 AP EAMCET 2010 · 30 May · Offline MCQ

The sum of angles of elevation of the top of a tower from two points distant a and b from the base and in the same straight line with it is 90°. Then the height of the tower is :

(A) a^2b

(B) ab^2

(C) $\sqrt{ab}$

(D) ab

Answer: (C) $\sqrt{ab}$ · Official APSCHE final key

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