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MATHEMATICS · EAPCET (EAMCET)

Inverse Trigonometric Functions

Previous Year Questions with answers

118 questions · **106** papers · **2010–2026** · newest paper first

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What is in this PDF: every Inverse Trigonometric Functions 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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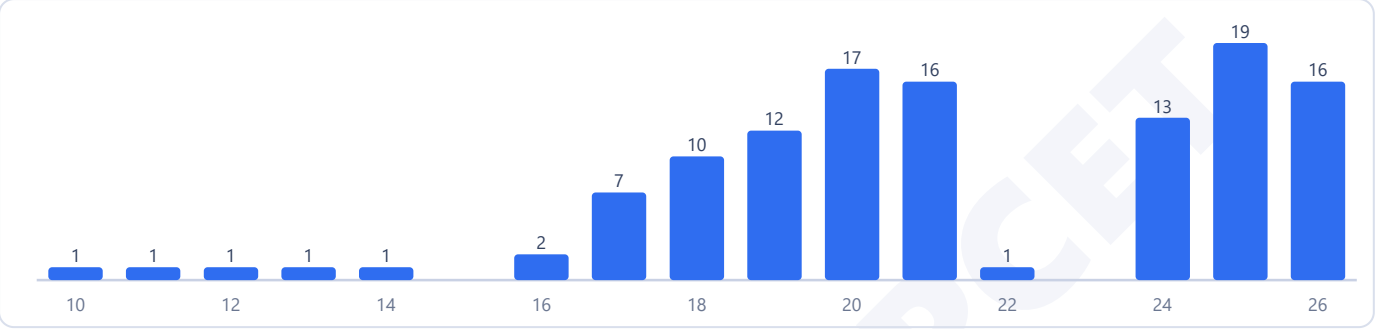
Chapter at a glance

0.8%	118	43 of 77	118 / 0
of Mathematics questions, 2022–2026	questions, 2010–2026	papers asked it, 2022–2026	MCQ / numerical, 2010–2026

Trend. Rising: 1 questions per paper in 2024–2026 against 0 in 2022–2023.

Questions per year



Counts are the questions we hold: 118 in 106 papers. No question in this chapter was found repeated across papers.

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

Properties & Equations	95
Domain, Range & Graphs	23

How often it comes up

Inverse Trigonometric Functions occupies a compact, specialized role within the EAPCET syllabus, ranking 26 of 29 mathematics chapters. Over the complete testing duration from 2010 through 2026, the chapter accounted for 118 questions across 149 evaluated exam papers (present in 106 papers, averaging 0.8 questions per paper and a 1.0 percent subject share). In modern testing between 2022 and 2026, Inverse Trigonometric Functions appeared in 43 of 77 sittings, yielding 49 questions (averaging 0.6 questions per paper and a 0.8 percent subject share).

Because it was absent in 2023, the chapter did not appear every single year in recent history, nor was it included in every individual sitting. However, its frequency increased markedly in the latest testing cycles. Over the recent three-year window from 2024 to 2026, it contributed 48 questions across 46 sittings (appearing in 42 papers, averaging 1.0 question per test and a 1.3 percent share). In the earlier period from 2010 to 2021, question setters administered 69 questions across 72 sittings (present in 63 papers, 1.0 per test, 1.2 percent share). Trend analysis reveals that comparing early testing with the last three years shows the share is about the same, whereas comparing recent testing with the last three years shows the share is up. Across individual state boards between 2022 and 2026, Andhra Pradesh papers contained 30 questions across 48 papers (featured in 26 papers, 0.6 per test, 0.8 percent share), while Telangana examinations set 19 questions across 29 papers (present in 17 papers, 0.7 per test, 0.8 percent share).

Most-asked topics

Questions in Inverse Trigonometric Functions fall into two specific domains:

- **Properties & Equations**: Producing 95 total questions, with 38 appearing in modern examinations (tested through 2026). Coverage emphasizes algebraic properties such as sin inverse x plus cos inverse x equals pi over two, addition and subtraction formulas for tan inverse x plus tan inverse y, double and triple angle inverse representations, solving inverse trigonometric algebraic equations, and summing telescopic arctangent series.

- **Domain, Range & Graphs**: Accounting for 23 total questions, with 11 set in recent testing (consistently examined through 2026). Concepts include principal value branches, domain restrictions for inverse sine and inverse cosine (between negative one and one), range limitations, graph behaviors, and resolving nested compositions of trigonometric and inverse trigonometric functions.

What the questions look like

Examiners test principal value evaluation, domain boundary constraints, and nested algebraic simplifications.

A widespread problem format presents nested alternating compositions of direct and inverse functions, such as cot of cos inverse of tan of sin inverse x, requiring students to construct auxiliary right-angled triangles to unravel each layer algebraically. Another recurring template features an equation with inverse sine or tangent terms where students must check whether roots fall inside the valid domain before deciding the number of real solutions. Candidates also frequently evaluate numerical sums of two or three inverse tangents or find parameter values satisfying given inverse identities.

How to practise it

Begin by committing principal value branches to memory. The principal branch of sin inverse x is closed interval negative pi over two to pi over two, for cos inverse x it is closed interval zero to pi, and for tan inverse x it is open interval negative pi over two to pi over two. Remembering these intervals is vital when evaluating expressions like sin inverse (sin theta) where theta lies outside the principal branch, requiring you to shift by multiples of pi.

Next, master the fundamental co-function identities: sin inverse x plus cos inverse x equals pi over two, tan inverse x plus cot inverse x equals pi over two, and sec inverse x plus cosec inverse x equals pi over two for all valid domain arguments. For addition of inverse tangents, remember that tan inverse x plus tan inverse y equals tan inverse ((x plus y) over (one minus x y)) when x y is less than one; if x and y are positive with x y greater than one, add pi to the result. When solving equations, always substitute potential solutions back into the original expression to discard spurious roots generated outside valid domain boundaries.

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Q1 AP EAPCET 2026 · 18 May · Shift 1 MCQ

If $\text{Tan}^{-1}\left(\frac{1}{2\sqrt{2}}\right) - \text{Cos}^{-1}\left(\frac{1}{\sqrt{3}}\right) + \text{Sin}^{-1}(x) = 0$, then $x =$

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

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

Q2 AP EAPCET 2026 · 18 May · Shift 2 MCQ

Match the items of List – I with those of List – II

List – I		List – II	
A	$\text{Tan}^{-1}3 + \text{Tan}^{-1}x = \text{Tan}^{-1}8 \Rightarrow x =$	I	$\frac{\sqrt{5}}{3}$
B	$\text{Sin}^{-1}x - \text{Cos}^{-1}x = \frac{\pi}{6} \Rightarrow x =$	II	$\frac{1}{5}$
C	$\text{Sin}^{-1}\frac{4}{5} + 2\,\text{Tan}^{-1}\frac{1}{3} =$	III	$\frac{\sqrt{3}}{2}$
D	$\tan\left(\text{Sec}^{-1}\frac{1}{x}\right) = \sin(\text{Tan}^{-1}2)\,, x > 0 \Rightarrow x =$	IV	$\frac{\pi}{2}$
		V	$\frac{\pi}{3}$

The Correct Match is:

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

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

Q3 AP EAPCET 2026 · 15 May · Shift 2 MCQ

$\sin\left[2\tan^{-1}\left(\frac{1}{2}\right) + \sin^{-1}\left(\frac{3}{5}\right)\right] =$

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

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

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Q4 AP EAPCET 2026 · 14 May · Shift 1 MCQ

If $x = -\frac{n}{n+1}, n \in \mathbb{N}$, then $2\,\mathrm{Cos}^{-1}x + \mathrm{Cos}^{-1}(2x^2-1) =$

(A) $4\,\mathrm{Cos}^{-1}x$

(B) 2π

(C) π

(D) $\mathrm{Cos}^{-1}(-x)$

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

Q5 AP EAPCET 2026 · 14 May · Shift 2 MCQ

$\mathrm{Tan}^{-1}\left(\frac{1}{2}\right) + \mathrm{Tan}^{-1}\left(\frac{1}{8}\right) + \mathrm{Tan}^{-1}\left(\frac{1}{18}\right) + \mathrm{Tan}^{-1}\left(\frac{1}{32}\right) =$

(A) $\mathrm{Tan}^{-1}\left(\frac{3}{5}\right)$

(B) $\mathrm{Tan}^{-1}\left(\frac{5}{8}\right)$

(C) $\mathrm{Tan}^{-1}\left(\frac{3}{4}\right)$

(D) $\mathrm{Tan}^{-1}\left(\frac{4}{5}\right)$

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

Q6 AP EAPCET 2026 · 14 May · Shift 2 MCQ

If $y = \mathrm{Tan}^{-1}\left(\frac{1}{1+x+x^2}\right) + \mathrm{Tan}^{-1}\left(\frac{1}{x^2+3x+3}\right) + \mathrm{Tan}^{-1}\left(\frac{1}{x^2+5x+7}\right)$, then $y'(0) =$

(A) $-\frac{3}{10}$

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

(C) $-\frac{7}{10}$

(D) $-\frac{9}{10}$

Answer: (D) $-\frac{9}{10}$ · The council's preliminary key

Q7 AP EAPCET 2026 · 13 May · Shift 1 MCQ

The number of real solutions of the equation $\mathrm{Tan}^{-1}\sqrt{x(x+1)} + \mathrm{Sin}^{-1}\sqrt{x^2+x+1} = \frac{\pi}{2}$ is

(A) 0

(B) 1

(C) 2

(D) Infinitely many

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

Q8 AP EAPCET 2026 · 13 May · Shift 2 MCQ

$\sin\left(\mathrm{Tan}^{-1}\frac{12}{17} + \mathrm{Tan}^{-1}\frac{5}{29}\right) =$

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

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

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Q9 AP EAPCET 2026 · 12 May · Shift 1 MCQ

For $b > a$, the solution of the equation $\cot(\mathrm{Cos}^{-1}x) = \sec\left\{\mathrm{Tan}^{-1}\frac{a}{\sqrt{b^2-a^2}}\right\}$ is

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

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

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Q10 AP EAPCET 2026 · 12 May · Shift 1 MCQ

$\sin\left(2\,\mathrm{Tan}^{-1}\left(\frac{1}{3}\right)\right) + \cos\left(\mathrm{Tan}^{-1}\,2\sqrt{2}\right) =$

(A) $\frac{16}{15}$
(B) $\frac{14}{15}$
(C) $\frac{11}{15}$
(D) $\frac{8}{15}$

Answer: (B) $\frac{14}{15}$ · The council's preliminary key

Q11 TS EAPCET 2026 · 11 May · Shift 1 MCQ

$\mathrm{Tan}^{-1}\frac{1}{2} + \mathrm{Tan}^{-1}\frac{1}{3} + \mathrm{Tan}^{-1}\frac{2}{3} + \mathrm{Tan}^{-1}\frac{1}{5} =$

(A) $\frac{\pi}{4}$
(B) $\mathrm{Tan}^{-1}\left(\frac{7}{11}\right)$
(C) $\frac{\pi}{2}$
(D) $\mathrm{Tan}^{-1}\left(\frac{23}{24}\right)$

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

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Q12 TS EAPCET 2026 · 11 May · Shift 2 MCQ

If $\alpha = \tan\left(2\text{Sin}^{-1}\left(\frac{2}{3}\right)\right)$ and $\beta = \sin\left(2\text{Tan}^{-1}\left(\frac{1}{3}\right)\right)$, then the maximum value of $\alpha\sin\theta + \beta\cos\theta =$

(A) 1
(B) $\frac{\sqrt{2009}}{5}$
(C) $\frac{\sqrt{2024}}{3}$
(D) $4\sqrt{5} + \frac{3}{5}$

Answer: (B) $\frac{\sqrt{2009}}{5}$ · The council's preliminary key

Q13 TS EAPCET 2026 · 10 May · Shift 1 MCQ

If $\text{Sin}^{-1}(2x) - 2\,\text{Cos}^{-1}\sqrt{1-x^2} = \frac{\pi}{2}$, then $\text{Tan}^{-1}(2x+1) =$

(A) $\frac{\pi}{6}$
(B) $\text{Sin}^{-1}x$
(C) $\frac{\pi}{3}$
(D) $\text{Cos}^{-1}x$

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

Q14 TS EAPCET 2026 · 10 May · Shift 2 MCQ

If $x \in \left(0, \frac{1}{\sqrt{2}}\right)$, then $\cot\left[\text{Cos}^{-1}\left\{\tan\left(\text{Sin}^{-1}x\right)\right\}\right] =$

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

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

Q15 TS EAPCET 2026 · 9 May · Shift 1 MCQ

The number of real solutions of the equation $\sin^{-1}(2-x) - 2\sin^{-1}x = \pm\frac{\pi}{2}$ is

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

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

Q16 TS EAPCET 2026 · 9 May · Shift 2 MCQ

If $\left(2\mathrm{Sin}^{-1}x\right)^3 = \pi^3 - \left(2\mathrm{Cos}^{-1}x\right)^3$, then one of the values of $\cos\left(2\mathrm{Sin}^{-1}x - 3\mathrm{Cos}^{-1}x\right)$ is

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

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

Q17 AP EAPCET 2025 · 27 May · Shift 1 MCQ

The equation $\cos^{-1}(1-\mathrm{x}) - 2\cos^{-1}\mathrm{x} = \frac{\pi}{2}$ has

(A) no solution
(B) only one solution
(C) two solutions
(D) more than two solutions

Answer: (B) only one solution · The council's preliminary key

Q18 AP EAPCET 2025 · 26 May · Shift 1 MCQ

If $\theta = \mathrm{Tan}^{-1}\left(\frac{1}{3}\right) + \mathrm{Tan}^{-1}\left(\frac{1}{7}\right) + \mathrm{Tan}^{-1}\left(\frac{1}{13}\right) + \mathrm{Tan}^{-1}\left(\frac{1}{21}\right) + \mathrm{Tan}^{-1}\left(\frac{1}{31}\right)$, then $\tan\theta =$

(A) $\frac{3}{5}$
(B) 1
(C) $\frac{5}{7}$
(D) $\frac{7}{9}$

Answer: (C) $\frac{5}{7}$ · The council's preliminary key

Q19 AP EAPCET 2025 · 26 May · Shift 2 MCQ

$\tan\left(2\,\mathrm{Tan}^{-1}\left(\frac{1}{3}\right) + \mathrm{Tan}^{-1}\left(\frac{1}{7}\right)\right) =$

(A) $\frac{1}{\sqrt{3}}$
(B) $\sqrt{3}$
(C) 1
(D) $3/7$

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

Q20 AP EAPCET 2025 · 24 May · Shift 1 MCQ

If $\cot(\mathrm{Cos}^{-1}x) = \sec\left\{\mathrm{Tan}^{-1}\left(\frac{a}{\sqrt{b^2-a^2}}\right)\right\}$, $b > a$, then $x =$

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

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

Q21 AP EAPCET 2025 · 23 May · Shift 1 MCQ

The range of the real valued function $f(x)=\mathrm{Cos}^{-1}\left(\frac{3}{\sqrt{9x^2-12x+22}}\right)$ is

(A) $\left(0,\frac{\pi}{4}\right]$
(B) $\left[\frac{\pi}{4},\frac{\pi}{2}\right)$
(C) $[0,\pi]$
(D) $\left[\frac{\pi}{6},\frac{\pi}{2}\right)$

Answer: (B) $\left[\frac{\pi}{4},\frac{\pi}{2}\right)$ · The council's preliminary key

Q22 AP EAPCET 2025 · 23 May · Shift 1 MCQ

If the equation $2\mathrm{Cot}^{-1}(x^2+2x+k)=\pi-3\mathrm{Tan}^{-1}(x^2+2x+k)$ has two distinct real solutions, then all the values of k lie in the interval

(A) $(-1,2)$
(B) $(1,\infty)$
(C) $(-\infty,\infty)$
(D) $(-\infty,1)$

Answer: (D) $(-\infty,1)$ · The council's preliminary key

Q23 AP EAPCET 2025 · 23 May · Shift 2 MCQ

The number of solutions of $\mathrm{Tan}^{-1}1+\frac{1}{2}\mathrm{Cos}^{-1}x^2-\mathrm{Tan}^{-1}\left(\frac{\sqrt{1+x^2}+\sqrt{1-x^2}}{\sqrt{1+x^2}-\sqrt{1-x^2}}\right)=0$ is

(A) 3
(B) 0
(C) 1
(D) infinitely many

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

Q24 AP EAPCET 2025 · 22 May · Shift 1 MCQ

The range of the real valued function $f(x) = \text{Cos}^{-1}(-x) + \text{Sin}^{-1}(-x) + \text{Cosec}^{-1}(x)$ is

(A) $\left\{0, \frac{\pi}{2}\right\}$
(B) $\left[0, \frac{\pi}{2}\right) \cup \left(\frac{\pi}{2}, \pi\right]$
(C) $\left(0, \frac{\pi}{2}\right)$
(D) $\{0, \pi\}$

Answer: (D) $\{0, \pi\}$ · The council's preliminary key

Q25 AP EAPCET 2025 · 22 May · Shift 2 MCQ

If $\frac{1}{2}\text{Sin}^{-1}\left(\frac{3\sin 2\theta}{5+4\cos 2\theta}\right) = \text{Tan}^{-1}x$ then $x =$

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

Answer: (B) $\frac{1}{3}\tan\theta$ · The council's preliminary key

Q26 AP EAPCET 2025 · 21 May · Shift 1 MCQ

$\text{Tan}^{-1}\frac{\sqrt{8-2\sqrt{15}}}{\sqrt{15}+1} + \text{Tan}^{-1}\frac{1}{\sqrt{5}} =$

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

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

Q27 AP EAPCET 2025 · 21 May · Shift 2 MCQ

If x is a real number, then the number of solutions of

$$\text{Tan}^{-1}\left(\sqrt{x(x+1)}\right) + \text{Sin}^{-1}\left(\sqrt{x^2+x+1}\right) = \frac{\pi}{2}$$

is

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

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

Q28 TS EAPCET 2025 · 4 May · Shift 1 MCQ

$\sin^{-1}(-\cos 2) + \cos^{-1}(\sin 3) + \tan^{-1}(\cot 5) =$

(A) 7
(B) 5
(C) $\frac{\pi}{2}$
(D) π

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

Q29 TS EAPCET 2025 · 4 May · Shift 1 MCQ

The domain of the derivative of the function $f(x) = \mathrm{Cos}^{-1}(2x-5) - \mathrm{Sin}^{-1}(x-2)$ is

(A) $[2,3]$
(B) $(-\infty, 2] \cup [3, \infty)$
(C) $(-\infty, 2) \cup (3, \infty)$
(D) $(2,3)$

Answer: (D) $(2,3)$ · The council's preliminary key

Q30 TS EAPCET 2025 · 4 May · Shift 2 MCQ

The number of real solutions of $\mathrm{Tan}^{-1}x + \mathrm{Tan}^{-1}2x = \frac{\pi}{4}$ is

(A) 2
(B) 1
(C) 0
(D) infinitely many

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

Q31 TS EAPCET 2025 · 4 May · Shift 2 MCQ

Consider the following

Assertion (A): $\int \sqrt{x-3}\left(\mathrm{Sin}^{-1}(\log x) + \mathrm{Cos}^{-1}(\log x)\right) dx = \frac{\pi}{3}(x-3)^{3/2} + c$

Reason (R): $\mathrm{Sin}^{-1}(f(x)) + \mathrm{Cos}^{-1}(f(x)) = \frac{\pi}{2}, |f(x)| < 1$

The correct answer is

(A) Both (A) and (R) are true, (R) is the correct explanation of (A)
(B) Both (A) and (R) are true, (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: (D) (A) is false, but (R) is true · The council's preliminary key

Q32 TS EAPCET 2025 · 3 May · Shift 1 MCQ

If $0 \leq x < \frac{3}{4}$ then the number of values of x satisfying the equation $\text{Tan}^{-1}(2x-1) + \text{Tan}^{-1}2x = \text{Tan}^{-1}4x - \text{Tan}^{-1}(2x+1)$ is

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

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

Q33 TS EAPCET 2025 · 3 May · Shift 2 MCQ

The number of values of x satisfying the equation

$$\text{Tan}^{-1}\left(x + \frac{\sqrt{2}}{x}\right) + \text{Tan}^{-1}\left(x - \frac{\sqrt{2}}{x}\right) = \text{Tan}^{-1}(x)$$

is

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

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

Q34 TS EAPCET 2025 · 2 May · Shift 1 MCQ

$\text{Tan}^{-1}\frac{3}{5} + \text{Tan}^{-1}\frac{6}{41} + \text{Tan}^{-1}\frac{9}{191} =$

(A) $\text{Tan}^{-1}\frac{9}{10}$
(B) $\text{Tan}^{-1}\frac{18}{19}$
(C) $\text{Tan}^{-1}\frac{3}{191}$
(D) $\text{Tan}^{-1}\frac{6}{205}$

Answer: (A) $\text{Tan}^{-1}\frac{9}{10}$ · The council's preliminary key

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Q35 TS EAPCET 2025 · 2 May · Shift 2 MCQ

Consider the following statements

Assertion (A): When x, y, z are positive numbers, then

$$\mathrm{Tan}^{-1}\left(\sqrt{\frac{x(x+y+z)}{yz}}\right)+\mathrm{Tan}^{-1}\left(\sqrt{\frac{y(x+y+z)}{xz}}\right)+\mathrm{Tan}^{-1}\left(\sqrt{\frac{z(x+y+z)}{xy}}\right)=\pi$$

Reason (R): $\mathrm{Tan}^{-1}a+\mathrm{Tan}^{-1}b=\mathrm{Tan}^{-1}\left(\frac{a+b}{1-ab}\right)$ if $a>0$ & $b>0$

The correct answer is

(A) Both (A) and (R) are true, (R) is the correct explanation of (A)

(B) Both (A) and (R) are true, (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 · The council's preliminary key

Q36 AP EAPCET 2024 · 23 May · Shift 1 MCQ

If $0<x<\frac{1}{2}$ and $\alpha=\mathrm{Sin}^{-1}x+\mathrm{Cos}^{-1}\left(\frac{x}{2}+\frac{\sqrt{3-3x^2}}{2}\right)$, then $\tan\alpha+\cot\alpha=$

(A) $\frac{4}{\sqrt{3}}$

(B) $4\sqrt{3}$

(C) $\frac{4x}{1-x^2}$

(D) $x\sqrt{1-x^2}$

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

Q37 AP EAPCET 2024 · 22 May · Shift 1 MCQ

The value of x such that $\sin\left(2\,\mathrm{Tan}^{-1}\frac{3}{4}\right)=\cos(2\,\mathrm{Tan}^{-1}x)$ is

(A) 7

(B) $\frac{3}{7}$

(C) $\frac{1}{7}$

(D) $\frac{4}{7}$

Answer: (C) $\frac{1}{7}$ · The council's preliminary key

Q38 AP EAPCET 2024 · 22 May · Shift 2 MCQ

$$\cot\left(\sum_{n=1}^{50}\mathrm{Tan}^{-1}\left(\frac{1}{1+n+n^2}\right)\right)=$$

(A) $\frac{26}{25}$
(B) $\frac{25}{26}$
(C) $\frac{50}{51}$
(D) $\frac{52}{51}$

Answer: (A) $\frac{26}{25}$ · The council's preliminary key

Q39 AP EAPCET 2024 · 21 May · Shift 2 MCQ

The range of the real valued function $f(x) = \text{Sin}^{-1}\left(\frac{1+x^2}{2x}\right) + \text{Cos}^{-1}\left(\frac{2x}{1+x^2}\right)$ is

(A) $\{\pi/2\}$
(B) R
(C) Q
(D) $\{-\pi/2, \pi/2\}$

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

Q40 AP EAPCET 2024 · 21 May · Shift 2 MCQ

The real values of x that satisfy the equation $\text{Tan}^{-1}x + \text{Tan}^{-1}2x = \frac{\pi}{4}$ is

(A) $\frac{-3\pm\sqrt{17}}{4}$
(B) $-1 \pm \sqrt{3}$
(C) $\sqrt{3} - 1$
(D) $\frac{\sqrt{17}-3}{4}$

Answer: (D) $\frac{\sqrt{17}-3}{4}$ · The council's preliminary key

Q41 AP EAPCET 2024 · 20 May · Shift 1 MCQ

$4\,Tan^{-1}\frac{1}{5} - Tan^{-1}\frac{1}{70} + Tan^{-1}\frac{1}{99} =$

(A) $\frac{\pi}{12}$
(B) $\frac{\pi}{6}$
(C) $\frac{\pi}{4}$
(D) $\frac{\pi}{3}$

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

Q42 AP EAPCET 2024 · 20 May · Shift 2 MCQ

If $\cos^{-1}2x + \cos^{-1}3x = \frac{\pi}{3}$ and $4x^2 = \frac{a}{b}$ then $a + b =$

(A) 12
(B) 11
(C) 31
(D) 10

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

Q43 AP EAPCET 2024 · 18 May · Shift 1 MCQ

$\text{Tan}^{-1}2 + \text{Tan}^{-1}3 =$

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

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

Q44 TS EAPCET 2024 · 11 May · Shift 1 MCQ

If $\text{Sin}^{-1}x - \text{Cos}^{-1}2x = \text{Sin}^{-1}\left(\frac{\sqrt{3}}{2}\right) - \text{Cos}^{-1}\left(\frac{\sqrt{3}}{2}\right)$, then $\text{Tan}^{-1}x + \text{Tan}^{-1}\left(\frac{x}{x+1}\right) =$

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

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

Q45 TS EAPCET 2024 · 10 May · Shift 1 MCQ

If $\text{Sin}^{-1}(4x) - \text{Cos}^{-1}(3x) = \frac{\pi}{6}$, then $x =$

(A) $\frac{\sqrt{3}}{2\sqrt{7}}$
(B) $\frac{\sqrt{3}}{4\sqrt{7}}$
(C) $\frac{\sqrt{3}}{2\sqrt{13}}$
(D) $\frac{\sqrt{3}}{4\sqrt{13}}$

Answer: (C) $\frac{\sqrt{3}}{2\sqrt{13}}$ · The council's preliminary key

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Q46 TS EAPCET 2024 · 10 May · Shift 2 MCQ

The trigonometric equation $\mathrm{Sin}^{-1}x = 2\mathrm{Sin}^{-1}a$, has a solution

(A) only when $\frac{1}{\sqrt{2}} < a < \frac{1}{2}$

(B) for all real values of 'a'

(C) only when $|a| \leq \frac{1}{\sqrt{2}}$

(D) only when $|a| \geq \frac{1}{\sqrt{2}}$

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

Q47 TS EAPCET 2024 · 9 May · Shift 1 MCQ

$\mathrm{Cos}^{-1}\frac{3}{5} + \mathrm{Sin}^{-1}\frac{5}{13} + \mathrm{Tan}^{-1}\frac{16}{63} =$

(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

Q48 TS EAPCET 2024 · 9 May · Shift 2 MCQ

If $2\,\mathrm{Tan}^{-1}x = 3\,\mathrm{Sin}^{-1}x$ and $x \neq 0$ then $8x^2 + 1 =$

(A) 13

(B) 5

(C) $\sqrt{7}$

(D) $\sqrt{17}$

Answer: (D) $\sqrt{17}$ · The council's preliminary key

Q49 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

$\lim_{n\to\infty}\sum_{r=1}^{n}\cot^{-1}\left(r^2 + \frac{3}{4}\right) =$

(A) $\cot^{-1}2$

(B) $\cot^{-1}\frac{1}{3}$

(C) $\tan^{-1}2$

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

Answer: (C) $\tan^{-1}2$ · The council's preliminary key

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Q50 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

Which of the following is true?

(A) $\text{Sin}^{-1}x + \text{Cos}^{-1}x = \frac{\pi}{2}\ \forall x \in R$

(B) $\text{Cos}^{-1}\frac{1-x^2}{1+x^2} = 2\,\text{Tan}^{-1}x\ \forall x \in [-1,1]$

(C) $\text{Sec}^{-1}\left(\frac{2019}{2020}\right) + \text{Cosec}^{-1}\left(\frac{2019}{2020}\right) = \frac{\pi}{2}$

(D) $\text{Sin}^{-1}\left(2x\sqrt{1-x^2}\right) = 2\,\text{Cos}^{-1}x\ \forall x \in \left[\frac{1}{\sqrt{2}}, 1\right]$

Answer: (D) $\text{Sin}^{-1}\left(2x\sqrt{1-x^2}\right) = 2\,\text{Cos}^{-1}x\ \forall x \in \left[\frac{1}{\sqrt{2}}, 1\right]$ · The council's preliminary key

Q51 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

Define $f : R \to R$ by $f(x) = \cos(\text{Tan}^{-1}(\sin(\text{Tan}^{-1}x)))$, then $\lim_{x\to\infty}(f \circ f)\,x =$

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

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

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

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

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

Q52 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

What is the value of $\text{Sin}^{-1}\frac{12}{13} + \text{Cos}^{-1}\frac{4}{5} + \text{Tan}^{-1}\frac{63}{16} =$

(A) π

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

(C) $\frac{\pi}{6}$

(D) $\frac{3\pi}{4}$

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

Q53 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

If $\text{Cos}^{-1}x = \text{Sin}^{-1}(3x)$ then $x =$

(A) $\frac{\sqrt{10}}{10}$
(B) $\frac{\sqrt{5}}{5}$
(C) $\frac{5}{2\sqrt{6}}$
(D) $\frac{-\sqrt{10}}{10}$

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

Q54 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

If $\theta = 2\text{Tan}^{-1}\frac{1}{8} + 2\text{Tan}^{-1}\frac{1}{5} + \text{Tan}^{-1}\frac{1}{7}$ and $\tan\frac{\theta}{2} = \sqrt{m} + \sqrt{n}$ where m and n are positive integers such that $m < n$ then $(m^n + n^m)^{m+n} =$

(A) 18
(B) 27
(C) 25
(D) 36

Answer: (B) 27 · The council's preliminary key

Q55 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

If $\text{Sec}^{-1}\frac{x}{a} - \text{Sec}^{-1}\frac{x}{b} = \text{Sec}^{-1}b - \text{Sec}^{-1}a$, then $x =$

(A) ab
(B) $-ab$
(C) a^2
(D) b^2

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

Q56 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

If $x = \sin(2\,\text{Tan}^{-1}2),\ y = \cos(2\,\text{Tan}^{-1}3),\ z = \sec(3\,\text{Tan}^{-1}4)$ then _____

(A) $x < y < z$
(B) $y < z < x$
(C) $z < x < y$
(D) $z < y < x$

Answer: (D) $z < y < x$ · The council's preliminary key

Q57 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

$\text{Tan}^{-1}(-2) - \text{Tan}^{-1}(3)$ is equal to

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

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

Q58 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

If $\mathrm{Tan}^{-1}\left[\frac{1}{1+1.2}\right]+\mathrm{Tan}^{-1}\left[\frac{1}{1+2.3}\right]+\cdots+\mathrm{Tan}^{-1}\left[\frac{1}{1+n(n+1)}\right]=\tan^{-1}[x]$, then $x=$

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

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

Q59 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

For how many distinct values of x, the following $\sin[2\cos^{-1}\cot(2\tan^{-1}x)]=0$ holds?

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

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

Q60 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

$2\,\mathrm{Tan}^{-1}\left(\frac{1}{3}\right)+\mathrm{Tan}^{-1}\left(\frac{1}{7}\right)=$

(A) $\mathrm{Tan}^{-1}\left(\frac{49}{29}\right)$
(B) $\frac{\pi}{2}$
(C) 0
(D) $\frac{\pi}{4}$

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

Q61 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

$2\sin^{-1}x+\sin^{-1}\left(2x\sqrt{1-x^2}\right)+3\cos^{-1}x-\cos^{-1}\left(4x^3-3x\right)=$

(A) $4\sin^{-1}x$, when $x \in [-1, 1]$

(B) π, when $x \in \left[-1, -\frac{1}{\sqrt{2}}\right]$

(C) $-\pi$, when $x \in \left[\frac{-1}{2}, \frac{1}{2}\right]$

(D) $4\sin^{-1}x + 2\cos^{-1}\left(4x^3 - 3x\right)$, $x \in \left[\frac{1}{\sqrt{2}}, 1\right]$

Answer: (B) π, when $x \in \left[-1, -\frac{1}{\sqrt{2}}\right]$ · The council's preliminary key

Q62 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

$$\sin\left(\mathrm{Tan}^{-1}\frac{4}{5} + \mathrm{Tan}^{-1}\frac{4}{3} + \mathrm{Tan}^{-1}\frac{1}{9} - \mathrm{Tan}^{-1}\frac{1}{7}\right) =$$

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

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

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

(D) 1

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

Q63 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

If $f(n) = \tan\left[\mathrm{Tan}^{-1}\frac{1}{1+2} + \mathrm{Tan}^{-1}\frac{1}{1+6} + \mathrm{Tan}^{-1}\frac{1}{1+12} + \ldots + \mathrm{Tan}^{-1}\frac{1}{1+n(n+1)}\right]$ then $f(2021) =$

(A) $\frac{2020}{2022}$

(B) $\frac{2022}{2024}$

(C) $\frac{2021}{2023}$

(D) $\frac{2019}{2021}$

Answer: (C) $\frac{2021}{2023}$ · The council's preliminary key

Q64 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

If $\mathrm{Sin}^{-1}x < \mathrm{Cos}^{-1}x$, then

(A) $-1 \le x < \frac{1}{\sqrt{2}}$

(B) $-\sqrt{3} \le x < -1$

(C) $\frac{1}{\sqrt{2}} < x \le 1$

(D) $1 < x < \sqrt{3}$

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

Q65 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

If $\mathrm{Sin}^{-1}\left(\frac{x}{5}\right) + \mathrm{Cosec}^{-1}\left(\frac{5}{4}\right) = \frac{\pi}{2}$, then $5 + x =$

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(A) 6
(B) 5
(C) 7
(D) 8

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

Q66 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

If $\mathrm{Tan}^{-1}\left[\frac{1}{1+2}\right]+\mathrm{Tan}^{-1}\left[\frac{1}{1+(2)(3)}\right]+\mathrm{Tan}^{-1}\left[\frac{1}{1+(3)(4)}\right]+\cdots+\mathrm{Tan}^{-1}\left[\frac{1}{1+n(n+1)}\right]=\mathrm{Tan}^{-1}\theta$, then $\theta=$

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

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

Q67 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

If $\theta=\mathrm{Cot}^{-1}(7)+\mathrm{Cot}^{-1}(8)+\mathrm{Cot}^{-1}(18)$, then $\cot\theta$ is equal to

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

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

Q68 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

If $y=\mathrm{Cosec}^{-1}(x)$ and $\frac{dy}{dx}=\frac{-1}{|x|\sqrt{x^2-1}}$, then

(A) $y\in\left(-\frac{\pi}{2},0\right)$
(B) $y\in\left(-\frac{\pi}{2},2\pi\right)$
(C) $y\in\left(-\frac{\pi}{2},0\right)\cup\left(0,\frac{\pi}{2}\right)$
(D) $y\in R$

Answer: (C) $y\in\left(-\frac{\pi}{2},0\right)\cup\left(0,\frac{\pi}{2}\right)$ · The council's preliminary key

Q69 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

Let $f(x)=\mathrm{Tan}^{-1}\left(\frac{1+\cos x}{\sin x}\right)$; $g(x)=\mathrm{Tan}^{-1}\left(\frac{\sin x}{1-\cos x}\right)$, then $\int(f(x)+g(x))\,dx=$

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

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

Q70 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

If $\theta \in \left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$, then $\mathrm{Cos}^{-1}(\sin\theta)$ is equal to

(A) $\frac{\pi}{2} - \theta$
(B) $\theta - \frac{\pi}{2}$
(C) $\frac{\pi}{2} + \theta$
(D) $\pi + \frac{\theta}{2}$

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

Q71 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

If $\sum_{n=1}^{k} \mathrm{Tan}^{-1}\left(\frac{1}{n^2+3n+3}\right) = \mathrm{Tan}^{-1}\alpha$, then $\alpha =$

(A) $\frac{k}{k+2}$
(B) $\frac{2k}{2k+1}$
(C) $\frac{k}{2k+5}$
(D) $\frac{3k}{4k+5}$

Answer: (C) $\frac{k}{2k+5}$ · Official TGCHE final key

Q72 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

The set of values of x such that $\mathrm{Tan}^{-1}\left(\frac{x}{x-2}\right) - \mathrm{Tan}^{-1}\left(\frac{x}{2x-1}\right) = \mathrm{Tan}^{-1}\left(\frac{2}{3}\right)$ is

(A) ϕ
(B) $\left\{\frac{1}{2}\right\}$
(C) $\left\{\frac{1}{3}, 2\right\}$
(D) $\left\{\frac{1}{3}, 4\right\}$

Answer: (D) $\left\{\frac{1}{3}, 4\right\}$ · Official TGCHE final key

Q73 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

The number of real roots of the equation $\sin\left[2\mathrm{Cos}^{-1}\{\cot(2\mathrm{Tan}^{-1}x)\}\right] = 0$ that are greater than or equal to one are

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

Answer: (B) 2 · Official TGCHE final key

Q74 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

For the least possible value of $n \in \mathbb{Z}$ the solution (x, y) of the equations $\text{Cos}^{-1}x + (\text{Sin}^{-1}y)^2 = \frac{n\pi^2}{4}$ and $\text{Cos}^{-1}x\,(\text{Sin}^{-1}y)^2 = \frac{\pi^4}{16}$, is

(A) $\left(\frac{\pi^2}{4}, \pm 1\right)$
(B) $\left(\frac{\pi^2}{4}, \sin\frac{\pi^2}{16}\right)$
(C) $\left(\cos\left(\frac{\pi^2}{4}\right), \pm 1\right)$
(D) $\left(\sin\left(\frac{\pi^2}{4}\right), \cos\frac{\pi}{4}\right)$

Answer: (C) $\left(\cos\left(\frac{\pi^2}{4}\right), \pm 1\right)$ · Official TGCHE final key

Q75 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

If $x = \left(\text{Tan}^{-1}\frac{1}{5} + \text{Tan}^{-1}\frac{1}{8}\right)$, then $\frac{\sin x + \cos x}{\tan x} =$

(A) $\frac{12}{\sqrt{10}}$
(B) $\frac{15}{\sqrt{10}}$
(C) $\frac{1}{\sqrt{10}}$
(D) $\frac{6\sqrt{2}}{\sqrt{10}}$

Answer: (A) $\frac{12}{\sqrt{10}}$ · Official TGCHE final key

Q76 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

If $\text{Tan}^{-1}\frac{1}{5} + \frac{1}{2}\text{Sec}^{-1}x + \text{Tan}^{-1}\frac{1}{8} = \frac{\pi}{8}$, then $x^2 =$

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(A) $\frac{12}{7}$
(B) $\frac{50}{49}$
(C) $\frac{13}{12}$
(D) $\frac{1}{2}$

Answer: (B) $\frac{50}{49}$ · Official TGCHE final key

Q77 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

If $\mathrm{Sin}^{-1}\left(\frac{12}{x}\right)+\mathrm{Sin}^{-1}\left(\frac{5}{x}\right)=\frac{\pi}{2}$, then $x=$

(A) 5
(B) 7
(C) 13
(D) 17

Answer: (C) 13 · Official TGCHE final key

Q78 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

If $f(x)=\mathrm{Tan}^{-1}\left(\frac{1}{\sin^2 x+\sin x+1}\right)+\mathrm{Tan}^{-1}\left(\frac{1}{\sin^2 x+3\sin x+3}\right)+\mathrm{Tan}^{-1}\left(\frac{1}{\sin^2 x+5\sin x+7}\right)+\ldots+$ upto 10 terms, then $f'(0)=$

(A) $\frac{-1}{101}$
(B) $\frac{100}{101}$
(C) $\frac{-100}{101}$
(D) 0

Answer: (C) $\frac{-100}{101}$ · Official TGCHE final key

Q79 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

Match the items of List-I with those of the items of List-II
List I
A) Range of $\mathrm{Sec}^{-1}[1+\cos^2 x]$, $[\cdot]$ denote greatest integer function
B) Domain of $f(x)$, where $f\left(x+\frac{1}{x}\right)=x^2+\frac{1}{x^2}$
C) $f(x+y)=f(x)+f(y)$; $f(1)=5$
D) $\mathrm{Sin}^{-1}x-\mathrm{Cos}^{-1}x+\mathrm{Sin}^{-1}(1-x)=0\Rightarrow x\in$
List II
I) odd function
II) $\left\{0,\frac{1}{2}\right\}$
III) $\{\mathrm{Sec}^{-1}5,\ \mathrm{Sec}^{-1}4\}$
IV) $\mathbb{R}-(-2,2)$

V) $\{\text{Sec}^{-1}1,\ \text{Sec}^{-1}2\}$

The correct match is

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

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

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

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

Answer: (A) A-V, B-IV, C-I, D-II · Official TGCHE final key

Q80 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

The domain of the function $f(x) = \text{Sec}^{-1}(3x-4) + \text{Tanh}^{-1}\left(\frac{x+3}{5}\right)$ is

(A) $(-8,1) \cup \left(\frac{5}{3},2\right)$

(B) $\left(1,\frac{5}{3}\right)$

(C) $[-8,1] \cup \left[\frac{5}{3},2\right]$

(D) $(-8,1] \cup \left[\frac{5}{3},2\right)$

Answer: (D) $(-8,1] \cup \left[\frac{5}{3},2\right)$ · Official TGCHE final key

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Q81 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

Let $\mathbb{Z}$ denote the set of integers. Then match the items in list - I, with those of the items in List - II

List -I

A) $\text{Sin}^{-1}\left(\frac{2\sqrt{2}}{3}\right) + \text{Sin}^{-1}\frac{1}{3}$

B) $\text{Sin}^{-1}\left(\frac{(-1)^n}{2}\right),\ n \in \mathbb{Z}$

C) $\text{Tan}^{-1}\left(\sec\frac{\pi}{4} + \tan\frac{\pi}{4}\right)$

D) $\text{Sin}^{-1}|\sin x| = \sqrt{\text{Sin}^{-1}|\sin x|} \Rightarrow x \in$

List -II

I) $k\pi \pm (-1)^k\frac{\pi}{6},\ k \in \mathbb{Z}$

II) $k\pi \pm 1,\ k \in \mathbb{Z}$

III) $\frac{3}{2}$

IV) $\frac{3\pi}{8}$

V) $\frac{\pi}{2}$

The correct match is

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

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

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

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

Answer: (C) A-V, B-I, C-IV, D-II · Official TGCHE final key

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Q82 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

Consider the statements:

(I): If $f(x) = \sin(\text{Cot}^{-1}(\cos(\text{Tan}^{-1}x)))$, then $f(0) = \frac{1}{2}$

(II): $\sin\left(4\,\text{Tan}^{-1}\frac{1}{5} - \text{Tan}^{-1}\frac{1}{239}\right) = 1$

Then the correct option among the following is

(A) Both I and II are false

(B) Both I and II are true

(C) I is true, but II is false

(D) I is false, but II is true

Answer: (A) Both I and II are false · Official TGCHE final key

Q83 TS EAMCET 2019 · 6 May · Shift 1 MCQ

If x_1, x_2, x_3 are the real roots of the equation $x^3 - x^2\tan\theta + x\tan^2\theta + \tan\theta = 0$ and $0 < \theta < \pi/4$, then the value of $\text{Tan}^{-1}x_1 + \text{Tan}^{-1}x_2 + \text{Tan}^{-1}x_3$ at $\theta = \frac{\pi}{12}$ is

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

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

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

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

Answer: (A) $\frac{\pi}{6}$ · Official TGCHE final key

Q84 TS EAMCET 2019 · 4 May · Shift 1 MCQ

For $a > 0$, if $f(x) = ax + b$ is an onto function form (sic) $[-1, 1]$ to $[0, 2]$, then $\cot\left[\tan^{-1}\frac{1}{7} + \tan^{-1}\frac{1}{8} + \tan^{-1}\frac{1}{5}\right] =$

(A) $f(-1)$

(B) $f(1)$

(C) $f(0)$

(D) $f(2)$

Answer: (B) $f(1)$ · Official TGCHE final key

Q85 TS EAMCET 2019 · 4 May · Shift 2 MCQ

If $\text{Cos}^{-1}x + \text{Cos}^{-1}y + \text{Cos}^{-1}z = 3\pi$, then

(A) $x+y+z-3=0$

(B) $x+y+z+3=0$

(C) $x+2y+3z-5=0$

(D) $x-y-z=0$

Answer: (B) $x+y+z+3=0$ · Official TGCHE final key

Q86 TS EAMCET 2019 · 3 May · Shift 1 MCQ

$\sec\left(\text{Tan}^{-1}\frac{y}{2}\right)=$

(A) $\sqrt{\frac{4+y^2}{2}}$

(B) $\sqrt{\frac{4-y^2}{2}}$

(C) $\frac{\sqrt{4+y^2}}{2}$

(D) $\frac{\sqrt{4-y^2}}{2}$

Answer: (C) $\frac{\sqrt{4+y^2}}{2}$ · Official TGCHE final key

Q87 TS EAMCET 2019 · 3 May · Shift 2 MCQ

If α and β are the roots of the quadratic equation $3x^2-16x+5=0$, then $\text{Tan}^{-1}\alpha+\text{Tan}^{-1}\beta-\text{Tan}^{-1}\left(\frac{\alpha+\beta}{1-\alpha\beta}\right)=$

(A) 0

(B) π

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

(D) $-\pi$

Answer: (B) π · Official TGCHE final key

Q88 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

The solution of the equation $\text{Sin}^{-1}x+\text{Sin}^{-1}2x=\frac{\pi}{3}$ is

(A) $-\frac{1}{2}\sqrt{\frac{3}{7}}$

(B) $\frac{1}{2}\sqrt{\frac{3}{7}}$

(C) $\frac{1}{2}\sqrt{\frac{2}{7}}$

(D) $-\frac{1}{3}\sqrt{\frac{2}{7}}$

Answer: (B) $\frac{1}{2}\sqrt{\frac{3}{7}}$ · Official APSCHE final key

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Q89 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

The sum of the maximum and the minimum values of $2\left(\text{Cos}^{-1}x\right)^2 - \pi\,\text{Cos}^{-1}x + \frac{\pi^2}{4}$ is

(A) $\frac{\pi^2}{8}$
(B) $\frac{3\pi^2}{8}$
(C) $\frac{3\pi^2}{2}$
(D) $4\pi^2$

Any attempt was accepted. Full marks for attempting. · Official APSCHE final key

Q90 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

If $x = a$ is a solution of the equation $\text{Sin}^{-1}\frac{x}{3} + \text{Sin}^{-1}\frac{2x}{3} = \text{Sin}^{-1}x$, then the roots of the equation $x^2 - ax - 1 = 0$ are

(A) ± 1
(B) $\frac{1}{2}, 1$
(C) $\pm\frac{1}{2}$
(D) $-\frac{1}{2}, 1$

Answer: (A) ± 1 · Official APSCHE final key

Q91 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

If α and β are the least and the greatest values of $f(x) = (\text{Sin}^{-1}x)^2 + (\text{Cos}^{-1}x)^2$ for all $x \in \mathbb{R}$ respectively, then $8(\alpha + \beta) =$

(A) π^2
(B) $11\pi^2$
(C) $9\pi^2$
(D) $25\pi^2$

Answer: (B) $11\pi^2$ · Official APSCHE final key

Q92 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

If $\sum_{k=1}^{n} \text{Tan}^{-1}\left(\frac{1}{k^2+k+1}\right) = \text{Tan}^{-1}(\theta)$, then $\theta =$

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

Answer: (A) $\frac{n}{n+2}$ · Official APSCHE final key

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Q93 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

$\cot\left[\sum_{n=3}^{32}\text{Cot}^{-1}\left(1+\sum_{k=1}^{n}2k\right)\right]=$

(A) $\frac{10}{3}$
(B) $\frac{8}{3}$
(C) $\frac{14}{3}$
(D) $\frac{16}{3}$

Answer: (A) $\frac{10}{3}$ · Official APSCHE final key

Q94 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

The sum of the values of x satisfying the equation $\text{Sin}^{-1}\left(\frac{3x}{5}\right)+\text{Sin}^{-1}\left(\frac{4x}{5}\right)=\text{Sin}^{-1}(x)$, is

(A) 0
(B) $\frac{1}{2}$
(C) $\frac{1}{3}$
(D) $\frac{1}{4}$

Answer: (A) 0 · Official APSCHE final key

Q95 TS EAMCET 2018 · 7 May · Shift 1 MCQ

All the values of x satisfying the equation $2\text{Tan}^{-1}2x=\text{Sin}^{-1}\left(\frac{4x}{1+4x^2}\right)$ lie in the interval

(A) $\left[-\frac{1}{2},\frac{1}{2}\right]$
(B) $[-1,1]$
(C) $\left[\frac{1}{2},\infty\right)$
(D) $\left(-\infty,-\frac{1}{2}\right]$

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

Q96 TS EAMCET 2018 · 5 May · Shift 1 MCQ

$\text{Sin}^{-1}\left(\frac{12}{13}\right)+\text{Cos}^{-1}\left(\frac{4}{5}\right)+\text{Tan}^{-1}\left(\frac{63}{16}\right)=$

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(A) 2π

(B) π

(C) 0

(D) $-\pi$

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

Q97 TS EAMCET 2018 · 5 May · Shift 2 MCQ

$\text{Tan}^{-1}\left(\frac{1}{2\sqrt{2}}\right) + \text{Sin}^{-1}\left(\frac{1}{\sqrt{3}}\right) = \text{Cos}^{-1}x$, then $x =$

(A) $\frac{1}{\sqrt{3}}$

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

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

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

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

Q98 TS EAMCET 2018 · 4 May · Shift 1 MCQ

$2\,\text{Tan}^{-1}\frac{1}{5} + \text{Sec}^{-1}\frac{5\sqrt{2}}{7} + 2\,\text{Tan}^{-1}\frac{1}{8} =$

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

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

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

(D) $\frac{\pi}{8}$

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

Q99 TS EAMCET 2018 · 4 May · Shift 2 MCQ

If $\text{Cos}^{-1}2x + \text{Cos}^{-1}3x = \frac{\pi}{3}$ then $x =$

(A) $\frac{\sqrt{3}}{2\sqrt{7}}$

(B) $\frac{\sqrt{3}}{\sqrt{7}}$

(C) $\frac{\sqrt{2}}{\sqrt{5}}$

(D) $\frac{\sqrt{3}}{2\sqrt{5}}$

Answer: (A) $\frac{\sqrt{3}}{2\sqrt{7}}$ · The council's preliminary key

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Q100 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

$\text{Tan}^{-1}2 + \text{Cot}^{-1}(-3) + \text{Cot}^{-1}\frac{1}{3} + \text{Tan}^{-1}\left(-\frac{1}{2}\right) =$

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

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

Q101 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

If $\text{Tan}^{-1}\frac{1}{3} + \text{Tan}^{-1}\frac{1}{7} + \text{Tan}^{-1}\frac{1}{13} + \ldots + \text{Tan}^{-1}\frac{1}{n^2+n+1} = \text{Tan}^{-1}\theta$, then $\theta =$

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

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

Q102 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

If $\text{Cos}^{-1}\left(\frac{x}{2}\right) + \text{Cos}^{-1}\left(\frac{y}{3}\right) = \theta$, then $9x^2 - 12xy\cos\theta + 4y^2 =$

(A) $36\sin^2\theta$
(B) $37\sin^2\theta$
(C) $39\sin^2\theta$
(D) $36\cos^2\theta$

Answer: (A) $36\sin^2\theta$ · The council's preliminary key

Q103 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

$\lim_{n\to\infty}\sum_{r=1}^{n}\text{Tan}^{-1}\left(\frac{2r}{r^4+r^2+2}\right) =$

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

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

Q104 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

Consider the following statements
I. $\text{Sin}^{-1}(y^2 - 4y + 6) + \text{Cos}^{-1}(y^2 - 4y + 6) = \frac{\pi}{2},\ \forall y \in R$

II. $\text{Sec}^{-1}(y^2-4y+6)+\text{Cosec}^{-1}(y^2-4y+6)=\frac{\pi}{2},\ \forall y\in R$

Which of the above statement(s) is/are true?

(A) only I
(B) only II
(C) Both I and II
(D) Neither I nor II

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

Q105 TS EAMCET 2017 · 12 May · Offline MCQ

$\sin^{-1}\frac{\sqrt{3}}{2}+\sin^{-1}\sqrt{\frac{2}{3}}=$

(A) $\sin^{-1}\frac{\sqrt{3}+\sqrt{2}}{2\sqrt{3}}$
(B) $\pi-\sin^{-1}\left(\frac{\sqrt{3}+\sqrt{2}}{2\sqrt{3}}\right)$
(C) $-\pi-\sin^{-1}\left(\frac{\sqrt{3}+\sqrt{2}}{2\sqrt{3}}\right)$
(D) $\pi+\sin^{-1}\left(\frac{\sqrt{3}+\sqrt{2}}{2\sqrt{3}}\right)$

Answer: (B) $\pi-\sin^{-1}\left(\frac{\sqrt{3}+\sqrt{2}}{2\sqrt{3}}\right)$ · The council's preliminary key

Q106 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

If $\cot(\cos^{-1}x)=\sec\left\{\tan^{-1}\left(\frac{a}{\sqrt{b^2-a^2}}\right)\right\};\ b>a$, then $x=$

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

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

Q107 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

The range of $\text{Sin}^{-1}x+\text{Cos}^{-1}x+\text{Tan}^{-1}x$ is

(A) $\left(0, \frac{\pi}{2}\right)$

(B) $(0, \pi]$

(C) $\left[\frac{\pi}{4}, \frac{3\pi}{4}\right]$

(D) $[0, \pi]$

Answer: (C) $\left[\frac{\pi}{4}, \frac{3\pi}{4}\right]$ · The council's preliminary key

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Q108 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

The number of solutions of the equation $\sin\left[2\mathrm{Cos}^{-1}\{\cot(2\mathrm{Tan}^{-1}x)\}\right] = 0$ is

(A) 4

(B) 6

(C) 8

(D) Infinitely many

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

Q109 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

The number of solutions of the equation $2\cos^{-1}x + \sin^{-1}x = \frac{11\pi}{6}$ is

(A) 0

(B) 1

(C) 2

(D) 3

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

Q110 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

If α, β are the solutions of the equation $\mathrm{Sin}^{-1}x - \mathrm{Cos}^{-1}x = \mathrm{Sin}^{-1}(3x-2)$ and $\alpha > \beta$ then $3\alpha + 4\beta =$

(A) 3

(B) 4

(C) 5

(D) 6

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

Q111 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

Suppose $S_a(x) = \mathrm{Sec}^{-1}\left(\frac{x}{a}\right) + \mathrm{Sec}^{-1}(a)$ for $a \neq 0$. If $S_a(x) = S_b(x)$ for $a \neq b$ then $x =$

(A) 1
(B) $\pm ab$
(C) ab
(D) $-ab$

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

Q112 TS EAMCET 2016 · 15 May · Offline MCQ

The value of x which satisfies $\sin(\cot^{-1} x) = \cos(\tan^{-1}(1+x))$ is

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

Answer: (A) $-\frac{1}{2}$ · Official TGCHE final key

Q113 AP EAMCET 2016 · 29 Apr · Offline MCQ

If $x = \sin(2\tan^{-1} 2)$ and $y = \sin\left(\frac{1}{2}\tan^{-1}\frac{4}{3}\right)$, then

(A) $x > y$
(B) $x = y$
(C) $x = 0 = y$
(D) $x < y$

Answer: (A) $x > y$ · The council's preliminary key

Q114 AP EAMCET 2014 · 22 May · Offline MCQ

If $x > 0, y > 0, z > 0, xy + yz + zx < 1$ and if $\tan^{-1} x + \tan^{-1} y + \tan^{-1} z = \pi$ then $x + y + z =$

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

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

Q115 AP EAMCET 2013 · 10 May · Offline MCQ

$\cos^{-1}\left(\frac{5}{13}\right) + \cos^{-1}\left(\frac{3}{5}\right) = \cos^{-1} x \Rightarrow x =$

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(A) $\frac{3}{65}$
(B) $\frac{-36}{65}$
(C) $\frac{-33}{65}$
(D) -1

Answer: (C) $\frac{-33}{65}$ · The council's preliminary key

Q116 AP EAMCET 2012 · 12 May · Offline MCQ

If $\frac{1}{2} \leq x \leq 1$ then $\cos^{-1} x + \cos^{-1}\left(\frac{x}{2} + \frac{1}{2}\sqrt{3-3x^2}\right) =$

(A) $\frac{\pi}{6}$
(B) $\frac{\pi}{3}$
(C) π
(D) 0

Answer: (B) $\frac{\pi}{3}$ · Official APSCHE final key

Q117 AP EAMCET 2011 · 8 May · Offline MCQ

$(\tan^{-1} x)^2 + (\cot^{-1} x)^2 = \frac{5\pi^2}{8} \Rightarrow x =$

(A) -1
(B) 1
(C) 0
(D) $\pi\sqrt{\frac{5}{8}}$

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

Q118 AP EAMCET 2010 · 30 May · Offline MCQ

$\tan^{-1} x + \tan^{-1} y + \tan^{-1} z = \frac{\pi}{2} \Rightarrow 1 - xy - yz - zx =$

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

Answer: (B) 0 · Official APSCHE final key

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