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MATHEMATICS · EAPCET (EAMCET)

Hyperbolic Functions

Previous Year Questions with answers

150 questions · **138** papers · **2010–2026** · newest paper first

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What is in this PDF: every Hyperbolic 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.

Step-by-step solutions for every question are free in the EdLoop EAPCET app (Google Play) and on app.edloop.in. More chapters: pyq.edloop.in/free-pdfs/

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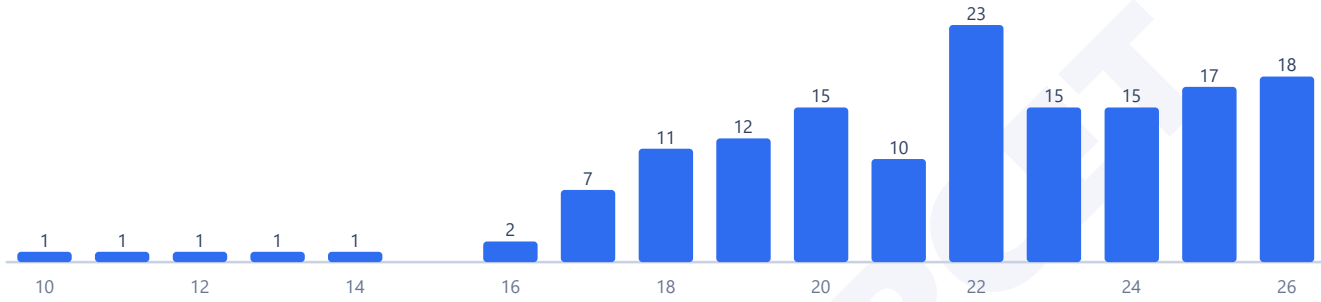
Chapter at a glance

1.4%	150	77 of 77	150 / 0
of Mathematics questions, 2022–2026	questions, 2010–2026	papers asked it, 2022–2026	MCQ / numerical, 2010–2026

Trend. Steady: 1.1 questions per paper in 2024–2026 against 1.2 in 2022–2023.

Questions per year



Counts are the questions we hold: 150 in 138 papers. No question in this chapter was found repeated across papers.

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

Hyperbolic Functions & Identities	81
Inverse Hyperbolic Functions	69

How often it comes up

Hyperbolic Functions represents a compact, highly reliable single-question topic within the EAPCET syllabus, holding rank 22 of 29 mathematics chapters. Over the complete testing record from 2010 through 2026, the chapter delivered 150 questions across 149 evaluated exam papers (appearing in 138 papers, averaging 1.0 question per paper and a 1.3 percent subject share). In modern testing between 2022 and 2026, Hyperbolic Functions was present in all 77 sittings, producing 88 questions (averaging 1.1 questions per paper and a 1.4 percent subject share).

Because it appears in every paper in recent history, every student writing an EAPCET examination shift encounters approximately one hyperbolic function problem. Over the three most recent testing years from 2024 to 2026, question setters included 50 questions across 46 sittings (all 46 papers, averaging 1.1 questions per test and a 1.4 percent share). During the older examination timeframe from 2010 to 2021, the chapter contributed 62 questions across 72 sittings (appearing in 61 papers, 0.9 per test, 1.1 percent share). Long-term trend analysis indicates that 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. In state-wise distributions between 2022 and 2026, Andhra Pradesh boards accounted for 54 questions across 48 papers (all 48 papers, 1.1 per test, 1.4 percent share), whereas Telangana set 34 questions across 29 papers (all 29 papers, 1.2 per test, 1.5 percent share).

Most-asked topics

Questions in Hyperbolic Functions organize into two primary areas:

- **Hyperbolic Functions & Identities**: Generating 81 total questions, including 50 in recent testing (consistently examined through 2026). Coverage emphasizes definitions via exponential functions (sinh x equals (e to the x minus e to the negative x) over two; cosh x equals (e to the x plus e to the negative x) over two), fundamental identity cosh squared x minus sinh squared x equals one, compound argument identities, double argument relations, and solving linear combinations of sinh and cosh.

- **Inverse Hyperbolic Functions**: Producing 69 total questions, with 38 set in recent examinations (tested through 2026). Concepts include logarithmic representations of inverse hyperbolic functions (sinh inverse x equals log of x plus square root of x squared plus one; cosh inverse x equals log of x plus square root of x squared minus one; tanh inverse x equals half log of (one plus x) over (one minus x)), their domains and ranges, and algebraic simplifications of exponential powers.

What the questions look like

Examiners test logarithmic representations of inverse functions, exponential algebraic conversions, and parameter conditions for real roots.

A typical problem gives a linear equation connecting sinh x and cosh x with numerical coefficients, asking candidates to solve for tanh x or determine parameter ranges for real solutions. Another standard template presents an inverse hyperbolic function evaluated at a rational number or surd, requiring conversion to logarithmic form. Candidates also encounter questions that compute sums of exponentials where the powers are inverse hyperbolic functions, simplifying neatly via the definitions.

How to practise it

Master the exponential definitions first: sinh x equals (e to the power x minus e to the power negative x) divided by two, and cosh x equals (e to the power x plus e to the power negative x) divided by two. From these definitions, derive all identities directly whenever in doubt. Notice the critical difference from standard circular trigonometry: cosh squared x minus sinh squared x equals one (a minus sign, not a plus sign), while one minus tanh squared x equals sech squared x.

For inverse hyperbolic functions, memorize the logarithmic conversion formulas thoroughly. Recall that sinh inverse x equals ln (x plus square root of (x squared plus one)) for all real x. For cosh inverse x, the formula is ln (x plus square root of (x squared minus one)) valid for x greater than or equal to one. For tanh inverse x, it equals half ln ((one plus x) divided by (one minus x)) for absolute value of x strictly less than one. When solving an equation like a sinh x plus b cosh x equals c, rewrite sinh and cosh in terms of e to the x to obtain a quadratic equation in e to the x.

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Q1 AP EAPCET 2026 · 18 May · Shift 1 MCQ

If $\sinh x = \frac{-1}{2}$, $\cosh y = 2$, and $x + y = \log p$, then $p =$

(A) $\frac{4+2\sqrt{3}}{\sqrt{5}+1}$

(B) $\frac{\sqrt{5}-1}{4\sqrt{3}+2}$

(C) $(\sqrt{5}-1)(2+\sqrt{3})$

(D) $\frac{4-2\sqrt{3}}{\sqrt{5}+1}$

Answer: (A) $\frac{4+2\sqrt{3}}{\sqrt{5}+1}$ · The council's preliminary key

Q2 AP EAPCET 2026 · 18 May · Shift 2 MCQ

If $u = \log_e\left[\tan\left(\frac{\pi}{4}+\frac{\theta}{2}\right)\right]$, then $\sinh u =$

(A) $\cos\theta$

(B) $\sec\theta$

(C) $\tan\theta$

(D) $\sin\theta$

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

Q3 AP EAPCET 2026 · 18 May · Shift 2 MCQ

If $y = \text{Sech}^{-1}\left(\frac{9}{9x^2+10}\right)$, then $\frac{dy}{dx} =$

(A) $\frac{-18x}{\sqrt{(9x^2+10)^2+81}}$

(B) $\frac{-18x}{\sqrt{(9x^2+10)^2-81}}$

(C) $\frac{18x}{\sqrt{(9x^2+19)(9x^2+1)}}$

(D) $\frac{18x(9x^2+10)}{\sqrt{(9x^2+19)(9x^2+1)}}$

Answer: (C) $\frac{18x}{\sqrt{(9x^2+19)(9x^2+1)}}$ · The council's preliminary key

Q4 AP EAPCET 2026 · 15 May · Shift 1 MCQ

If $\text{Sinh}^{-1}(2) + \text{Sinh}^{-1}(3) = \alpha$, then $\cosh\alpha =$

(A) $6-10\sqrt{2}$

(B) $6+10\sqrt{2}$

(C) $6-5\sqrt{2}$

(D) $6+5\sqrt{2}$

Answer: (D) $6+5\sqrt{2}$ · The council's preliminary key

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Q5 AP EAPCET 2026 · 15 May · Shift 2 MCQ

If $\text{Sinh}^{-1}x = \log(2+\sqrt{5})$ and $\text{Cosh}^{-1}y = \log(3+2\sqrt{2})$, then $\text{Tanh}^{-1}\left(\frac{1}{x}+\frac{1}{y}\right) =$

(A) $\log\sqrt{11}$
(B) $\frac{1}{2}\log 5$
(C) $\frac{1}{2}\log 7$
(D) $\log 3$

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

Q6 AP EAPCET 2026 · 14 May · Shift 1 MCQ

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

(A) $\log\left(\frac{3-\sqrt{5}}{2}\right)$
(B) $\log\left(3-\sqrt{5}\right)$
(C) $\log\left(\frac{7+3\sqrt{5}}{2}\right)$
(D) $\log\left(\frac{4\sqrt{5}+5}{2}\right)$

Answer: (A) $\log\left(\frac{3-\sqrt{5}}{2}\right)$ · The council's preliminary key

Q7 AP EAPCET 2026 · 14 May · Shift 2 MCQ

If $\tanh x = \frac{1}{3}$, then $6\sinh^4 x + 2\cosh^4 x + 2\sinh^2 x + \cosh^2 x =$

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

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

Q8 AP EAPCET 2026 · 13 May · Shift 1 MCQ

If $u = \log\tan\left(\frac{\pi}{4}+\frac{\theta}{2}\right)$, then $\tanh\frac{u}{2} =$

(A) $\tan\frac{\theta}{2}$
(B) $\cot\frac{\theta}{2}$
(C) $\sec\frac{\theta}{2}$
(D) $\sin\frac{\theta}{2}$

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

Q9 AP EAPCET 2026 · 13 May · Shift 2 MCQ

If $\text{Cosech}^{-1}x = \log\left(\frac{5\sqrt{2}-1}{7}\right)$ then, $\text{Tanh}^{-1}\left(\frac{1}{x}\right) =$

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

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

Q10 AP EAPCET 2026 · 12 May · Shift 1 MCQ

$\text{Sinh}^{-1}\left(-\frac{4}{3}\right) =$

(A) $\log\left[\frac{\sqrt{7}-2}{3}\right]$
(B) $-\log 3$
(C) $\frac{1}{2}\log\left(\frac{1}{7}\right)$
(D) $-\log 4$

Answer: (B) $-\log 3$ · The council's preliminary key

Q11 AP EAPCET 2026 · 12 May · Shift 1 MCQ

If $x \in (-\infty, -1)$, then $\int \frac{1}{\sqrt{x^2-1}}dx =$

(A) $\log\left(x+\sqrt{x^2-1}\right)+c$
(B) $-\text{Cosh}^{-1}(-x)+c$
(C) $\log\left(-x+\sqrt{x^2-1}\right)+c$
(D) $\text{Sech}^{-1}x+c$

Answer: (B) $-\text{Cosh}^{-1}(-x)+c$ · The council's preliminary key

Q12 AP EAPCET 2026 · 12 May · Shift 2 MCQ

If $5\sinh x - \cosh x = 5$, then $\tanh x =$

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

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

Q13 TS EAPCET 2026 · 11 May · Shift 1 MCQ

If $\text{Tanh}^{-1}(x) = \log\sqrt{3}$ and $\text{Cosh}^{-1}y = \log\left(1+\sqrt{2}\right)$, then $\text{Sech}^{-1}(xy) =$

(A) $\log\left(1+\sqrt{2}\right)$
(B) $\log\left(\sqrt{3}+\sqrt{6}\right)$
(C) $\log\sqrt{2}$
(D) $\log\sqrt{3}$

Answer: (A) $\log\left(1+\sqrt{2}\right)$ · The council's preliminary key

Q14 TS EAPCET 2026 · 11 May · Shift 2 MCQ

$\log\left(\sinh\theta+\sqrt{\sinh^2\theta+1}\right)=$

(A) $\cosh\theta$
(B) $\text{Sinh}^{-1}\theta$
(C) θ
(D) $\text{Cosh}^{-1}\theta$

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

Q15 TS EAPCET 2026 · 10 May · Shift 1 MCQ

$\text{Coth}^{-1}2=$

(A) $\text{Sech}^{-1}\left(\frac{1}{\sqrt{5}}\right)$
(B) $\text{Tanh}^{-1}\left(\frac{1}{3}\right)$
(C) $\text{Cosh}^{-1}\left(\sqrt{2}\right)$
(D) $\text{Cosech}^{-1}\left(\sqrt{3}\right)$

Answer: (D) $\text{Cosech}^{-1}\left(\sqrt{3}\right)$ · The council's preliminary key

Q16 TS EAPCET 2026 · 10 May · Shift 2 MCQ

If $\sinh x=\frac{12}{5}$, then $\cosh 2x-\sinh 2x=$

(A) 25
(B) $\frac{1}{125}$
(C) $\frac{1}{25}$
(D) 125

Answer: (C) $\frac{1}{25}$ · The council's preliminary key

Q17 TS EAPCET 2026 · 9 May · Shift 1 MCQ

If α is a real number and $2\sinh^2 x-3\cosh x+\alpha=0$ has a solution, then the range of α is

(A) $[3, \infty)$
(B) $(0, \frac{25}{8})$
(C) $[3, \frac{25}{8}]$
(D) $(-\infty, 3]$

Answer: (D) $(-\infty, 3]$ · The council's preliminary key

Q18 TS EAPCET 2026 · 9 May · Shift 2 MCQ

$e^{\text{Sinh}^{-1}(2\sqrt{2})} + e^{\text{Cosh}^{-1}(3)} =$

(A) $2e^{\text{Tanh}^{-1}\left(\frac{1}{2\sqrt{2}}\right)}$
(B) $\frac{2}{3}e^{\text{Cosech}^{-1}(3)}$
(C) $2e^{\text{Sech}^{-1}\left(\frac{1}{3}\right)}$
(D) $\frac{1}{3}e^{\text{Coth}^{-1}(2\sqrt{2})}$

Answer: (C) $2e^{\text{Sech}^{-1}\left(\frac{1}{3}\right)}$ · The council's preliminary key

Q19 AP EAPCET 2025 · 27 May · Shift 1 MCQ

If $\text{Sinh}^{-1}(2) + \text{Sinh}^{-1}(3) = \alpha$ then $\sinh\alpha =$

(A) $2\sqrt{5} + 3\sqrt{10}$
(B) $2\sqrt{10} + 4\sqrt{5}$
(C) $3\sqrt{10} + 4\sqrt{5}$
(D) $2\sqrt{10} + 3\sqrt{5}$

Answer: (D) $2\sqrt{10} + 3\sqrt{5}$ · The council's preliminary key

Q20 AP EAPCET 2025 · 26 May · Shift 1 MCQ

If $\text{Tanh}^{-1}x = \text{Coth}^{-1}y = \log\sqrt{5}$, then $\text{Tan}^{-1}(xy) =$

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

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

Q21 AP EAPCET 2025 · 26 May · Shift 2 MCQ

$\text{Tanh}^{-1}\left(\frac{1}{3}\right) + \text{Coth}^{-1}(3) =$

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(A) $\text{Sech}^{-1}\left(\frac{1}{3}\right)$
(B) $\text{Cosech}^{-1}\left(\frac{1}{3}\right)$
(C) $\text{Cosh}^{-1}\left(\frac{4}{3}\right)$
(D) $\text{Sinh}^{-1}\left(\frac{3}{4}\right)$

Answer: (D) $\text{Sinh}^{-1}\left(\frac{3}{4}\right)$ · The council's preliminary key

Q22 AP EAPCET 2025 · 24 May · Shift 1 MCQ

If $\text{Sinh}^{-1}x = \log 3$ and $\text{Cosh}^{-1}y = \log\frac{3}{2}$, then $\text{Tanh}^{-1}(x-y) =$

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

Answer: (A) $\log\sqrt{\frac{5}{3}}$ · The council's preliminary key

Q23 AP EAPCET 2025 · 23 May · Shift 1 MCQ

$\text{Sech}^{-1}(\sin\alpha) =$

(A) $\log\left(\sin\alpha + \sqrt{\sin^2\alpha - 1}\right)$
(B) $\log(\tan\alpha + 1)$
(C) $\log\left(\cot\frac{\alpha}{2}\right)$
(D) $\log\left(\frac{1+\tan\alpha}{2\sin\alpha}\right)$

Answer: (C) $\log\left(\cot\frac{\alpha}{2}\right)$ · The council's preliminary key

Q24 AP EAPCET 2025 · 23 May · Shift 2 MCQ

$\text{Tanh}^{-1}(\sin\theta) =$

(A) $\text{Sinh}^{-1}(\text{cosec}\,\theta)$
(B) $\text{Sinh}^{-1}(\sec\theta)$
(C) $\text{Cosh}^{-1}(\text{cosec}\,\theta)$
(D) $\text{Cosh}^{-1}(\sec\theta)$

Answer: (D) $\text{Cosh}^{-1}(\sec\theta)$ · The council's preliminary key

Q25 AP EAPCET 2025 · 22 May · Shift 1 MCQ

If $\cosh 2x = 199$, then $\coth x =$

(A) $\frac{5}{3\sqrt{11}}$
(B) $\frac{5}{6\sqrt{11}}$
(C) $\frac{7}{3\sqrt{11}}$
(D) $\frac{10}{3\sqrt{11}}$

Answer: (D) $\frac{10}{3\sqrt{11}}$ · The council's preliminary key

Q26 AP EAPCET 2025 · 22 May · Shift 2 MCQ

If $\operatorname{sech}^{-1}x = \log 2$ and $\operatorname{cosech}^{-1}y = -\log 3$, then $(x+y) =$

(A) $\frac{1}{6}$
(B) $\frac{1}{20}$
(C) 6
(D) 20

Answer: (B) $\frac{1}{20}$ · The council's preliminary key

Q27 AP EAPCET 2025 · 21 May · Shift 1 MCQ

If $\cos\alpha = \operatorname{sech}\beta$, then $\beta =$

(A) $\log(\sec\alpha + \tan\alpha)$
(B) $\log(\sec\alpha - \tan\alpha)$
(C) $\log(\sin\alpha + \cos\alpha)$
(D) $\log(\cos\alpha + \cot\alpha)$

Answer: (A) $\log(\sec\alpha + \tan\alpha)$ · The council's preliminary key

Q28 AP EAPCET 2025 · 21 May · Shift 2 MCQ

Domain of the real valued function $f(x) = \log(x^2-1) + x\operatorname{Coth}^{-1}x$ is

(A) $\mathbb{R}$
(B) $(-1,1)$
(C) $\mathbb{R} - [-1,1]$
(D) $\mathbb{R} - [0,1]$

Answer: (C) $\mathbb{R} - [-1,1]$ · The council's preliminary key

Q29 AP EAPCET 2025 · 21 May · Shift 2 MCQ

If $y = \operatorname{Tanh}^{-1}\sqrt{\frac{1-x}{1+x}}$, then $\frac{dy}{dx} =$

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

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

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

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

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

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Q30 TS EAPCET 2025 · 4 May · Shift 1 MCQ

If $x = \log_e 3$ then $\tanh 2x + \operatorname{sech} 2x =$

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

(B) $\frac{49}{41}$

(C) $\frac{4}{5}$

(D) $\frac{41}{49}$

Answer: (B) $\frac{49}{41}$ · The council's preliminary key

Q31 TS EAPCET 2025 · 4 May · Shift 2 MCQ

Consider the following statements

Statement-I: $\mathrm{Cosh}^{-1}x = \mathrm{Tanh}^{-1}x$ has no solution

Statement-II: $\mathrm{Cosh}^{-1}x = \mathrm{Coth}^{-1}x$ has only one solution

The correct answer is

(A) Both statements I and II are true

(B) Both statements I and II are false

(C) Statement I is true, but statement II is false

(D) Statement I is false, but statement II is true

Answer: (A) Both statements I and II are true · The council's preliminary key

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Q32 TS EAPCET 2025 · 3 May · Shift 1 MCQ

If $\mathrm{Sinh}^{-1}x = \mathrm{Cosh}^{-1}y = \log(1+\sqrt{2})$ then $\mathrm{Tan}^{-1}(x+y) =$

(A) $67\frac{1}{2}^\circ$

(B) 75°

(C) $22\frac{1}{2}^\circ$

(D) 15°

Answer: (A) $67\frac{1}{2}^\circ$ · The council's preliminary key

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Q33 TS EAPCET 2025 · 3 May · Shift 2 MCQ

$\coth^2 x - \tanh^2 x =$

(A) $4\,\text{cosech}\,2x\,\tanh 2x$

(B) $4\,\text{sech}\,2x\,\coth 2x$

(C) $4\,\text{sech}\,2x\,\tanh 2x$

(D) $4\cosh 2x\,(\text{cosech}\,2x)^2$

Answer: (D) $4\cosh 2x\,(\text{cosech}\,2x)^2$ · The council's preliminary key

Q34 TS EAPCET 2025 · 2 May · Shift 1 MCQ

If $2\text{Tanh}^{-1}x = \text{Sinh}^{-1}\left(\frac{4}{3}\right)$ then $\text{Cosh}^{-1}\left(\frac{1}{x}\right) =$

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

(B) $\log(\sqrt{2}-1)$

(C) $\log(2+\sqrt{3})$

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

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

Q35 TS EAPCET 2025 · 2 May · Shift 2 MCQ

If $e^{\left(\text{Sinh}^{-1}2+\text{Cosh}^{-1}\sqrt{6}\right)} = (a+(b+\sqrt{c})\sqrt{a}+b\sqrt{c})$, then $a+b+c =$

(A) 13

(B) 15

(C) 17

(D) 11

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

Q36 AP EAPCET 2024 · 23 May · Shift 1 MCQ

$\cosh(\log 4) =$

(A) $\frac{8}{17}$

(B) $\frac{17}{8}$

(C) 0

(D) $\frac{9}{8}$

Answer: (B) $\frac{17}{8}$ · The council's preliminary key

Q37 AP EAPCET 2024 · 23 May · Shift 1 MCQ

If $y = \text{Sinh}^{-1}\left(\frac{1-x}{1+x}\right)$ then $\frac{dy}{dx} =$

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

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

Q38 AP EAPCET 2024 · 22 May · Shift 1 MCQ

If $\tanh x = \operatorname{sech} y = \frac{3}{5}$ and e^{x+y} is an integer, then $e^{x+y} =$

(A) 2
(B) 8
(C) 1
(D) 6

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

Q39 AP EAPCET 2024 · 22 May · Shift 2 MCQ

If $\sinh x = \frac{\sqrt{21}}{2}$ then $\cosh 2x + \sinh 2x =$

(A) $\frac{21}{2}$
(B) $\frac{25}{2}$
(C) $\frac{23+5\sqrt{21}}{2}$
(D) $\frac{32+5\sqrt{23}}{2}$

Answer: (C) $\frac{23+5\sqrt{21}}{2}$ · The council's preliminary key

Q40 AP EAPCET 2024 · 21 May · Shift 1 MCQ

If θ is an acute angle, $\cosh x = K$ and $\sinh x = \tan\theta$, then $\sin\theta =$

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

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

Q41 AP EAPCET 2024 · 21 May · Shift 2 MCQ

$2\coth^{-1}(4) + \operatorname{sech}^{-1}\left(\frac{3}{5}\right) =$

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

Answer: (A) $\log 5$ · The council's preliminary key

Q42 AP EAPCET 2024 · 20 May · Shift 1 MCQ

If $5 \sinh x - \cosh x = 5$, then one of the values of $\tanh x$ is

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

Answer: (C) $\frac{-3}{5}$ · The council's preliminary key

Q43 AP EAPCET 2024 · 20 May · Shift 2 MCQ

If $\theta = \sec^{-1}(\cosh u)$, then $u =$

(A) $\log_e \left(\cot\left(\frac{\theta}{2} - \frac{\pi}{4}\right)\right)$
(B) $\log_e \left(\tan\left(\frac{\theta}{2} - \frac{\pi}{4}\right)\right)$
(C) $\log_e \left(\tan\left(\frac{\pi}{4} - \frac{\theta}{2}\right)\right)$
(D) $\log_e \left(\tan\left(\frac{\pi}{4} + \frac{\theta}{2}\right)\right)$

Answer: (D) $\log_e \left(\tan\left(\frac{\pi}{4} + \frac{\theta}{2}\right)\right)$ · The council's preliminary key

Q44 AP EAPCET 2024 · 19 May · Shift 2 MCQ

$\cosh\left(\sinh^{-1}(\sqrt{8}) + \cosh^{-1} 5\right) =$

(A) $\sqrt{6} + 4\sqrt{2}$
(B) $15 + 8\sqrt{3}$
(C) $6\sqrt{6} + 10\sqrt{2}$
(D) $8 - 15\sqrt{3}$

Answer: (B) $15 + 8\sqrt{3}$ · The council's preliminary key

Q45 AP EAPCET 2024 · 18 May · Shift 1 MCQ

$\text{Cosh}^{-1} 2 =$

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

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

Q46 TS EAPCET 2024 · 11 May · Shift 1 MCQ

$\text{Sech}^{-1}\left(\frac{3}{5}\right) - \text{Tanh}^{-1}\left(\frac{3}{5}\right) =$

(A) $\log_e 6$
(B) $\log_e 5$
(C) $\log_e\left(\frac{3}{2}\right)$
(D) $\log_e\left(\frac{2}{3}\right)$

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

Q47 TS EAPCET 2024 · 10 May · Shift 1 MCQ

If $\text{Sinh}^{-1}(-\sqrt{3}) + \text{Cosh}^{-1}(2) = K$, then $\cosh K =$

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

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

Q48 TS EAPCET 2024 · 10 May · Shift 2 MCQ

If $\sinh x = \frac{12}{5}$, then $\sinh 3x + \cosh 3x =$

(A) 125
(B) 144
(C) 169
(D) 216

Answer: (A) 125 · The council's preliminary key

Q49 TS EAPCET 2024 · 9 May · Shift 1 MCQ

If $\text{Cosh}^{-1}\left(\frac{5}{3}\right) + \text{Sinh}^{-1}\left(\frac{3}{4}\right) = k$, then $e^k =$

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

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

Q50 TS EAPCET 2024 · 9 May · Shift 2 MCQ

Match the functions given in List-I with their relevant characteristics from List-II

LIST-I		LIST-II	
(A)	$\sinh x$	(I)	Domain is $(-1, 1)$, even function
(B)	$\operatorname{sech} x$	(II)	Domain is $[1, \infty)$, neither even nor odd function
(C)	$\tanh x$	(III)	Even function
(D)	$\operatorname{Cosech}^{-1} x$	(IV)	Range is $\mathbb{R}$, odd function
		(V)	Range is $(-1, 1)$, odd function

The correct answer is

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

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

Q51 AP EAPCET 2023 · 19 May · Shift 1 MCQ

If $\sin x \cosh y = \cos \theta$ and $\cos x \sinh y = \sin \theta$, then $\sin^2 x + \cosh^2 y =$

(A) 1
(B) 2
(C) $\sin 2\theta$
(D) $\cos 2\theta$

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

Q52 AP EAPCET 2023 · 18 May · Shift 1 MCQ

$\log(\cosh 3 + \sinh 3) + \log(\cosh 3 - \sinh 3) =$

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

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

Q53 AP EAPCET 2023 · 18 May · Shift 2 MCQ

If $\cosh x = \operatorname{cosec}\theta$, then $\coth^2 \frac{x}{2} =$

(A) $\tan^2 \frac{\theta}{2}$
(B) $\tan^2\left(\frac{\pi}{4} - \frac{\theta}{2}\right)$
(C) $\cot^2 \frac{\theta}{2}$
(D) $\cot^2\left(\frac{\pi}{4} - \frac{\theta}{2}\right)$

Answer: (D) $\cot^2\left(\frac{\pi}{4} - \frac{\theta}{2}\right)$ · The council's preliminary key

Q54 AP EAPCET 2023 · 17 May · Shift 1 MCQ

If $\sinh x = \frac{5}{12}$, then $\cosh \frac{x}{2} =$

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

Answer: (D) $\frac{5}{2\sqrt{6}}$ · The council's preliminary key

Q55 AP EAPCET 2023 · 17 May · Shift 2 MCQ

If $\tan A = \tan\alpha \coth x = \cot\beta \tanh x$, then $\tan(\alpha + \beta) =$

(A) $\cosh 2x \operatorname{cosec} 2A$
(B) $\cosh 2x \sec 2A$
(C) $\sinh 2x \cos 2A$
(D) $\sinh 2x \operatorname{cosec} 2A$

Answer: (D) $\sinh 2x \operatorname{cosec} 2A$ · The council's preliminary key

Q56 AP EAPCET 2023 · 16 May · Shift 1 MCQ

$\cosh\alpha + \sinh\alpha = e^3$ and $\sinh x = \frac{\alpha}{\alpha + 1}$, then $\tanh x =$

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

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

Q57 AP EAPCET 2023 · 16 May · Shift 2 MCQ

If $2\sinh x = \cosh x$, then $x =$

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

Answer: (C) $\frac{1}{2}\log 3$ · The council's preliminary key

Q58 AP EAPCET 2023 · 15 May · Shift 1 MCQ

If $\alpha = \log_e\left(2+\sqrt{3}\right)$, then $\frac{\cosh\alpha}{1-\tanh\alpha} + \frac{\sinh\alpha}{1-\coth\alpha} =$

(A) $4+2\sqrt{3}$
(B) $7+4\sqrt{3}$
(C) $\frac{\sqrt{3}+1}{2}$
(D) $2+\sqrt{3}$

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

Q59 AP EAPCET 2023 · 15 May · Shift 2 MCQ

If $\cosh x = \frac{5}{4}$, then $\tanh 3x =$

(A) $\frac{63}{65}$
(B) $\frac{25}{26}$
(C) $\frac{65}{67}$
(D) $\frac{252}{265}$

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

Q60 TS EAMCET 2023 · 14 May · Shift 1 MCQ

If $x = \log(y+\sqrt{y^2+1})$ then $y =$

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(A) $\tanh x$
(B) $\coth x$
(C) $\sinh x$
(D) $\cosh x$

Answer: (C) $\sinh x$ · The council's preliminary key

Q61 TS EAMCET 2023 · 14 May · Shift 2 MCQ

If $\sin x.\cosh y = \cos\theta$ and $\cos x.\sinh y = \sin\theta$ then $\sin^2 x + \cosh^2 y =$

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

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

Q62 TS EAMCET 2023 · 13 May · Shift 1 MCQ

If $\cosh x = \frac{4}{3}$, then $3\cosh x + 3^2\cosh 2x + 3^3\cosh 3x =$

(A) 175
(B) 81
(C) 64
(D) 27

Answer: (A) 175 · The council's preliminary key

Q63 TS EAMCET 2023 · 13 May · Shift 2 MCQ

If $\sinh x = -\frac{4}{3}$ then $\sinh 2x + \cosh 2x =$

(A) $\frac{-31}{41}$
(B) $\frac{-20}{9}$
(C) $\frac{49}{41}$
(D) $\frac{1}{9}$

Answer: (D) $\frac{1}{9}$ · The council's preliminary key

Q64 TS EAMCET 2023 · 12 May · Shift 1 MCQ

If $Sinh(\log x) = -2$ then $x =$

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

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

Q65 TS EAMCET 2023 · 12 May · Shift 2 MCQ

$\text{Sin h}\left(\log\left(3+\sqrt{8}\right)\right) =$

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

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

Q66 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

If $\sinh x = \tan A$, then $|\tanh x| =$

(A) $|\sin A|$
(B) $|\cos A|$
(C) $|\sec A|$
(D) $|\text{cosec } A|$

Answer: (A) $|\sin A|$ · The council's preliminary key

Q67 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

$\dfrac{\sinh(x+y)+\sinh(x-y)}{\cosh(x+y)-\cosh(x-y)} =$

(A) $\tanh y$
(B) $\coth y$
(C) $\tanh x \coth y$
(D) $\tanh y \coth x$

Answer: (B) $\coth y$ · The council's preliminary key

Q68 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

Assertion(A) : $\cot hx = \dfrac{1-k}{1+k}$ $(0<k<2)$.
Reason(R) : The graph of $y=\tan hx$ always lies between the lines $y=-1$ and $y=1$.
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: (D) (A) is false but (R) is true · The council's preliminary key

Q69 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

If $\frac{5\sinh 2x}{7+6\cosh 2x}=\frac{3}{2}$, then $3\tan h^2x+20\tan hx=$

(A) 13

(B) 26

(C) 39

(D) $\frac{13}{2}$

Answer: (C) 39 · The council's preliminary key

Q70 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

If the minimum value of $\cos(\sinh(\log x)+\cosh(\log x))$ is k, then $\cosh(k+1)=$

(A) $\frac{e+e^{-1}}{2}$

(B) $\frac{e^2+e^{-2}}{2}$

(C) e

(D) 1

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

Q71 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

If $\sinh x=\frac{-1}{2}$ then $\tanh 2x=$

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

(B) $-\sqrt{3}$

(C) $\frac{-\sqrt{5}}{3}$

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

Answer: (C) $\frac{-\sqrt{5}}{3}$ · The council's preliminary key

Q72 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

If $e^{it}=\cos t+i\sin t$ and $e^{-it}=\cos t-i\sin t$ then $\cosh(x+iy)-\cosh(x-iy)=$

(A) $2\sinh x\sinh y$

(B) $2i\sinh x\cos y$

(C) $2\cosh x\cos y$

(D) $2i\sinh x\sin y$

Answer: (D) $2i\sinh x\sin y$ · The council's preliminary key

Q73 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

If $\theta=\frac{\pi}{12}$ and $x=\log\left(\cot\left(\frac{\pi}{4}+\theta\right)\right)$, then $\cosh x=$

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

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

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

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

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

Q74 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

$2\cosh(x+y)\sinh(x-y)+\sinh 2y=$

(A) $\sinh 2x$

(B) $\frac{\sinh 2x+\sinh 2y}{2}$

(C) $\frac{\sinh 2x-\sinh 2y}{2}$

(D) $\cosh 2x$

Answer: (A) $\sinh 2x$ · The council's preliminary key

Q75 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

$\frac{e^{4x}+e^{-4x}+14}{4(e^{x}-e^{-x})^{2}}=$

(A) $\sinh^2 x+\coth^2 x$

(B) $\sinh^2 x+\operatorname{sech}^2 x$

(C) $\cosh^2 x+\operatorname{sech}^2 x$

(D) $\cosh^2 x+\tanh^2 x$

Answer: (A) $\sinh^2 x+\coth^2 x$ · The council's preliminary key

Q76 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

If $\tanh x=\frac{1}{2}$ then $\sinh 2x-\operatorname{sech} 2x=$

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(A) $\frac{29}{15}$
(B) $\frac{11}{15}$
(C) 3
(D) $\frac{-13}{15}$

Answer: (B) $\frac{11}{15}$ · The council's preliminary key

Q77 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

If one solution of the equation $\cosh x - \frac{4}{5}\sinh x = 1$ is $x = 0$, then the other solution is $x =$

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

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

Q78 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

If $k \in \mathbf{R}$ is such that the equation $2\cosh^2 x = 3\sinh x + k$ has no real solution, then which of the following is correct?

(A) $k < \frac{1}{2}$
(B) $k < \frac{3}{8}$
(C) $k < \frac{7}{8}$
(D) $k < \frac{5}{8}$

Answer: (C) $k < \frac{7}{8}$ · The council's preliminary key

Q79 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

If $\cosh(x - \log 3) = \sinh x$, then $x =$

(A) $\frac{1}{2}\log 3$
(B) $\frac{1}{2}\log 6$
(C) $\frac{1}{2}\log 5$
(D) $\log 3$

Answer: (B) $\frac{1}{2}\log 6$ · The council's preliminary key

Q80 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

$\tanh(\log x) =$

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

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

Q81 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

For any real number $n \in R$, $(\cosh x + \sinh x)^n =$

(A) $\cosh nx - \sinh nx$
(B) $\cosh nx + \sinh nx$
(C) $\cosh^2 nx + 2\sinh nx$
(D) $\cosh nx - \sinh nx$

Answer: (B) $\cosh nx + \sinh nx$ · The council's preliminary key

Q82 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

Let $\theta \in \mathbf{R}$ such that $3\sinh(2\theta) = 13 - 3e^{2\theta}$, then $\theta =$

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

Answer: (A) $\frac{1}{2}\log 3$ · The council's preliminary key

Q83 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

If $2\cosh 2x + 10\sinh 2x = 5$, then $x =$

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

Answer: (A) $\frac{1}{2}\log\frac{4}{3}$ · The council's preliminary key

Q84 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

If $\operatorname{cosech} x = \frac{4}{5}$, then $\cosh x =$

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(A) $\sqrt{\frac{41}{21}}$
(B) $\sqrt{\frac{41}{19}}$
(C) $\sqrt{\frac{41}{25}}$
(D) $\sqrt{\frac{41}{16}}$

Answer: (D) $\sqrt{\frac{41}{16}}$ · The council's preliminary key

Q85 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

Let $x \in \mathbf{R}$ and $|x| < 1$. Then $\tanh^{-1} x =$

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

Answer: (A) $\frac{1}{2}\log\left(\frac{1+x}{1-x}\right)$ · The council's preliminary key

Q86 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

If $\operatorname{cosech} x = \frac{4}{5}$, then $\sinh x =$

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

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

Q87 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

The value of $\frac{1+\tanh x}{1-\tanh x}$ is

(A) e^x
(B) e^{-2x}
(C) e^{2x}
(D) e^{-x}

Answer: (C) e^{2x} · The council's preliminary key

Q88 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

If $4 + 6(e^{2x}+1)\tanh x = 11\cosh x + 11\sinh x$, then $x =$

(A) $\log 10$
(B) $\log 4$
(C) $\log 5$
(D) $\log 2$

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

Q89 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

Which of the following expression is always true?

(A) $\cosh \frac{x}{2} = \sqrt{\frac{\cosh x - 1}{2}}$
(B) $\tanh\left(\frac{x}{2}\right) = \frac{2\sinh x}{\cosh x + 1}$
(C) $\sinh\left(\frac{x}{2}\right) = \frac{\sinh x}{\sqrt{2(\cosh x + 1)}}$
(D) $\sinh\left(\frac{x}{2}\right) = \frac{\sinh x}{\sqrt{2(\cosh x - 1)}}$

Answer: (C) $\sinh\left(\frac{x}{2}\right) = \frac{\sinh x}{\sqrt{2(\cosh x + 1)}}$ · The council's preliminary key

Q90 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

For what values of x, the following identity is valid & holds? $\tanh^{-1}(x) = \frac{1}{2}\log_e\left(\frac{1+x}{1-x}\right)$

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

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

Q91 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

$\sinh(x+y)\cosh(x-y)$ is equal to

(A) $\frac{1}{2}(\sinh 2x + \sinh 2y)$
(B) $(\sinh 2x + \sinh 2y)$
(C) $\frac{1}{2}(\sinh 2x - \sinh 2y)$
(D) $(\sinh 2x - \sinh 2y)$

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

Q92 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

If $\sinh u = \tan\theta$, then $\cosh u$ is equal to

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(A) $-\sec\theta$
(B) $\sec\theta$
(C) $\sin\theta$
(D) $\cot\theta$

Answer: (B) $\sec\theta$ · The council's preliminary key

Q93 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

If $\cosh 2x = 241$, then $\coth x =$

(A) $\frac{7}{\sqrt{30}}$
(B) $\frac{11}{\sqrt{30}}$
(C) $\frac{7}{2\sqrt{30}}$
(D) $\frac{11}{2\sqrt{30}}$

Answer: (D) $\frac{11}{2\sqrt{30}}$ · The council's preliminary key

Q94 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

If the range of $\text{Sec}^{-1}hx + \text{Cosec}^{-1}hx$ is $[a, b)$, then

(A) $a = 0,\ b = 1$
(B) $a = \sqrt{2},\ b = \infty$
(C) $a = \log(1+\sqrt{2}),\ b = \infty$
(D) $a = 0,\ b = \log(1+\sqrt{2})$

Answer: (C) $a = \log(1+\sqrt{2}),\ b = \infty$ · The council's preliminary key

Q95 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

Let $k > 0$ and $t = \text{Sech}^{-1}\left(\frac{1}{2}\right) - \text{Cosech}^{-1}\left(\frac{3}{k}\right)$. If $3e^t = 2+\sqrt{3}$, then $k =$

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

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

Q96 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

If $y = \log_2 \sin x$, then the minimum value of $\cos h\, y$ is

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

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

Q97 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

$\text{Coth}^{-1}(2) + \text{Cosech}^{-1}(-2\sqrt{2}) =$

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

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

Q98 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

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

(A) $\log\sqrt{6}$
(B) $\log 6$
(C) $-\log\sqrt{6}$
(D) $-\log 6$

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

Q99 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

$\frac{1+\tanh(x/2)}{1-\tanh(x/2)} =$

(A) e^{-x}
(B) e^{x}
(C) $2e^{x/2}$
(D) $2e^{-x/2}$

Answer: (B) e^{x} · The council's preliminary key

Q100 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

If $y = \log(\cosh x)$ then $\frac{d^2y}{dx^2} =$

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(A) $\operatorname{sech}^2 x$
(B) $-\operatorname{sech}^2 x$
(C) $\sinh x$
(D) $-\sinh x$

Answer: (A) $\operatorname{sech}^2 x$ · The council's preliminary key

Q101 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

If $\sec(x) = \cosh(\theta)$, then find $\tanh^2(\theta/2)$

(A) $\sec^2(x/2)$
(B) $\tan^2(x/2)$
(C) $\tanh^2(x/2)$
(D) $\operatorname{sech}^2(x/2)$

Answer: (B) $\tan^2(x/2)$ · The council's preliminary key

Q102 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

If $\operatorname{Tanh}^{-1}(x+iy) = \frac{1}{2}\operatorname{Tanh}^{-1}\left(\frac{2x}{1+x^2+y^2}\right) + \frac{i}{2}\operatorname{Tan}^{-1}\left(\frac{2y}{1-x^2-y^2}\right)$, where $x, y \in R$, then $\operatorname{Tanh}^{-1}(iy) =$

(A) $i\operatorname{Tanh}^{-1}(y)$
(B) $-i\operatorname{Tanh}^{-1}(y)$
(C) $i\operatorname{Tan}^{-1}(y)$
(D) $-i\operatorname{Tan}^{-1}(y)$

Answer: (C) $i\operatorname{Tan}^{-1}(y)$ · The council's preliminary key

Q103 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

If $\tanh(x) = \frac{1}{3}$, then $\tanh(3x)$ is

(A) $\frac{8}{9}$
(B) $\frac{7}{9}$
(C) 1
(D) $\frac{2}{3}$

Answer: (B) $\frac{7}{9}$ · The council's preliminary key

Q104 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

The function $f(x) = \operatorname{sech}(x)$ on $\mathbf{R}$ has the range _____

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(A) $(0, \infty)$
(B) $(0, 1]$
(C) $[1, \infty)$
(D) $(1, \infty)$

Answer: (B) $(0, 1]$ · The council's preliminary key

Q105 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

If $\sinh\left(2\,\text{Tanh}^{-1}x\right) = \frac{11}{60}$, then $x =$

(A) -11
(B) $\frac{-1}{11}$
(C) $\frac{1}{11}$
(D) 11

Answer: (C) $\frac{1}{11}$ · Official TGCHE final key

Q106 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

If $\sin\theta\cosh\alpha = \tan x$, $\cos\theta\sinh\alpha = \sec x$, then $\cos 2\theta\cosh 2\alpha =$

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

Answer: (C) 3 · Official TGCHE final key

Q107 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

If $\text{Sech}^{-1}\left(\frac{1}{2}\right) - \text{Cosech}^{-1}\left(\frac{3}{4}\right) = \log_e k$, then

(A) $3k^2 - 12k - 1 = 0$
(B) $3k^2 - 12k + 1 = 0$
(C) $9k^2 - 12k + 1 = 0$
(D) $9k^2 - 12k - 1 = 0$

Answer: (C) $9k^2 - 12k + 1 = 0$ · Official TGCHE final key

Q108 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

If for $|x| > 1$ $\text{Tanh}^{-1}\left(\frac{1}{x}\right) + \text{Coth}^{-1}(x) = \log_e(f(x))$, then $f(-5) =$

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

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

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

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

Answer: (C) $\frac{2}{3}$ · Official TGCHE final key

Q109 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

Match the functions of List - I with their derivates given in List – II

List -I

A) $\text{Sec}^{-1}x$

B) $\text{Tanh}^{-1}x$

C) $\text{Coth}^{-1}x$

D) $\text{Cosech}^{-1}x$

List -II

I) $\frac{1}{1-x^2}$, $x \in (-1,1)$

II) $\frac{-1}{|x|\sqrt{x^2+1}}$, $x \neq 0$

III) $\frac{1}{|x|\sqrt{x^2-1}}$, $|x| > 1$

IV) $\frac{1}{1-x^2}$, $x \in \mathbb{R} - [-1,1]$

V) $\frac{-1}{|x|\sqrt{1-x^2}}$, $|x| < 1, x \neq 0$

The correct match is

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

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

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

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

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

Q110 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

Assertion (A): $\text{Cosech}^{-1}(3) = \log\left(\frac{1+\sqrt{10}}{3}\right)$

Reason (R): $e^{\text{Cosh}^{-1}x}$ is a root of the quadratic equation $x\,p^2 - 2p - x = 0$

The correct option among the following is

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(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: (C) (A) is true but (R) is false · Checked by our team

Q111 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

$\text{Log}\left(9+3\sqrt{2}\,(2+\sqrt{5})+4\sqrt{5}\right)=$

(A) $\text{Sinh}^{-1}3+\text{Cosh}^{-1}\left(\frac{1}{3}\right)$
(B) $\text{Cosh}^{-1}3+\text{Sinh}^{-1}3$
(C) $\text{Tanh}^{-1}3+\text{Sinh}^{-1}3$
(D) $\text{Cosh}^{-1}3+\text{Tanh}^{-1}3$

Answer: (B) $\text{Cosh}^{-1}3+\text{Sinh}^{-1}3$ · Official TGCHE final key

Q112 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

$\text{Sinh}^{-1}(-2)+\text{Cosech}^{-1}(-2)+\text{Coth}^{-1}(-2)=$

(A) $\log\left(\frac{7-3\sqrt{5}}{2\sqrt{3}}\right)$
(B) $\log\left(\frac{3-\sqrt{5}}{2\sqrt{3}}\right)$
(C) $\log\left(\frac{7+3\sqrt{5}}{2\sqrt{3}}\right)$
(D) $\log\left(\frac{3+\sqrt{5}}{2\sqrt{3}}\right)$

Answer: (A) $\log\left(\frac{7-3\sqrt{5}}{2\sqrt{3}}\right)$ · Official TGCHE final key

Q113 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

If $x=\text{Sech}^{-1}\frac{1}{2}+\text{Tanh}^{-1}\frac{1}{2}$, then $\cosh x=$

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

Answer: (C) $\frac{4\sqrt{3}+3}{3}$ · Official TGCHE final key

Q114 TS EAMCET 2019 · 6 May · Shift 1 MCQ

If $y=\log_e\tan\left(\frac{\pi}{4}+\frac{x}{2}\right)$, then $\tanh\left(\frac{y}{2}\right)=$

(A) $\cot \frac{x}{2}$
(B) $\tan x$
(C) $\coth x$
(D) $\tan \frac{x}{2}$

Answer: (D) $\tan \frac{x}{2}$ · Official TGCHE final key

Q115 TS EAMCET 2019 · 4 May · Shift 1 MCQ

The solution of the equation $2\cosh 2x + 10\sinh 2x = 5$ is

(A) $\frac{1}{2}\log\left(\frac{3}{5}\right)$
(B) $\frac{1}{2}\log\left(\frac{4}{3}\right)$
(C) $\frac{1}{2}\log\left(\frac{5}{4}\right)$
(D) $\frac{1}{2}\log\left(\frac{5}{3}\right)$

Answer: (B) $\frac{1}{2}\log\left(\frac{4}{3}\right)$ · Official TGCHE final key

Q116 TS EAMCET 2019 · 4 May · Shift 2 MCQ

If $\text{Sinh}^{-1}(\sqrt{8}) + \text{Sinh}^{-1}(\sqrt{24}) = \alpha$, then $\sinh\alpha =$

(A) $6\sqrt{6} - 10\sqrt{2}$
(B) $6\sqrt{6} + 10\sqrt{2}$
(C) $16\sqrt{6}$
(D) $16\sqrt{6} + 4\sqrt{2}$

Answer: (B) $6\sqrt{6} + 10\sqrt{2}$ · Official TGCHE final key

Q117 TS EAMCET 2019 · 3 May · Shift 1 MCQ

The number of roots of the equation $\sqrt{2} + e^{\text{Cosh}^{-1}x} - e^{\text{Sinh}^{-1}x} = 0$ is

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

Answer: (B) 1 · Official TGCHE final key

Q118 TS EAMCET 2019 · 3 May · Shift 2 MCQ

$\sinh\left[\log(2+\sqrt{5})\right] + \cosh\left[\log(2+\sqrt{3})\right] =$

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

Answer: (A) 4 · Official TGCHE final key

Q119 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

If $-\frac{\pi}{2} < \theta < \frac{\pi}{2}$, then $\log\left|\tan\left(\frac{\pi}{4}+\frac{\theta}{2}\right)\right| =$

(A) $\text{Tanh}^{-1}\left(\tan\frac{\theta}{2}\right)$
(B) $2\,\text{Tanh}^{-1}\left(\tan\frac{\theta}{2}\right)$
(C) $\text{Coth}^{-1}\left(\tan\frac{\theta}{2}\right)$
(D) $2\,\text{Coth}^{-1}\left(\tan\frac{\theta}{2}\right)$

Answer: (B) $2\,\text{Tanh}^{-1}\left(\tan\frac{\theta}{2}\right)$ · Official APSCHE final key

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Q120 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

If $y = \log_e \tan\left(\frac{\pi}{4}+\frac{x}{2}\right)$, then $\tanh\left(\frac{y}{2}\right) =$

(A) $\cot\left(\frac{x}{2}\right)$
(B) $\tan x$
(C) $\coth x$
(D) $\tan\left(\frac{x}{2}\right)$

Answer: (D) $\tan\left(\frac{x}{2}\right)$ · Official APSCHE final key

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Q121 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

The set of all real values of x for which $f(x) = \log_e\sqrt{\frac{1+x}{1-x}} + \log_e\left|\left(\frac{1+\sqrt{1-x^2}}{x}\right)\right| + \text{Coth}^{-1}x + \log_e\left|\left(\frac{1+\sqrt{1+x^2}}{x}\right)\right| + \text{Sinh}^{-1}x$ is defined is

(A) ϕ
(B) $(0,1)$
(C) $(-1,1)$
(D) $(0,1]$

Answer: (A) ϕ · Official APSCHE final key

Q122 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

If $x \in \left(\frac{-\pi}{2}, \frac{\pi}{2}\right)$, then $\log \sec x =$

(A) $2\,\text{Cosech}^{-1}\left(\cot^2\frac{x}{2} - 1\right)$

(B) $2\,\text{Cosech}^{-1}\left(\cot^2\frac{x}{2} + 1\right)$

(C) $2\,\text{Coth}^{-1}\left(\text{cosec}^2\frac{x}{2} - 1\right)$

(D) $2\,\text{Coth}^{-1}\left(\text{cosec}^2\frac{x}{2} + 1\right)$

Answer: (C) $2\,\text{Coth}^{-1}\left(\text{cosec}^2\frac{x}{2} - 1\right)$ · Official APSCHE final key

Q123 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

$e^{\left(\text{Sech}^{-1}\frac{1}{2} + \text{Tanh}^{-1}\frac{1}{2} + \text{Sinh}^{-1}\frac{1}{2}\right)} =$

(A) $\frac{2 + 3\sqrt{3} + 2\sqrt{5} + 3\sqrt{15}}{2}$

(B) $\frac{3 + 2\sqrt{3} + 3\sqrt{5} + 2\sqrt{15}}{2}$

(C) $\frac{2 + 3\sqrt{3} + 4\sqrt{5} + 5\sqrt{15}}{2}$

(D) $\frac{2 + 3\sqrt{3} - 4\sqrt{5} + 5\sqrt{15}}{2}$

Answer: (B) $\frac{3 + 2\sqrt{3} + 3\sqrt{5} + 2\sqrt{15}}{2}$ · Official APSCHE final key

Q124 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

If $\sin x \cosh y = \cos\theta,\ \cos x \sinh y = \sin\theta$ and $4\tan x = 3$. Then $\sinh^2 y =$

(A) $\frac{4}{5}$

(B) $\frac{9}{16}$

(C) $\frac{9}{25}$

(D) $\frac{16}{25}$

Answer: (D) $\frac{16}{25}$ · Official APSCHE final key

Q125 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

If $\theta = \frac{\pi}{6}$ and $x = \log\left[\cot\left(\frac{\pi}{4} + \theta\right)\right]$ then $\sinh(x) =$

(A) $\sqrt{3}$

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

(C) $-\sqrt{3}$

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

Answer: (C) $-\sqrt{3}$ · Official APSCHE final key

Q126 TS EAMCET 2018 · 7 May · Shift 1 MCQ

$\sinh^{-1} 2 + \cosh^{-1} 2 - \tanh^{-1} \frac{2}{3} + \coth^{-1}(-2) =$

(A) $\log\left(\frac{4+2\sqrt{3}+2\sqrt{5}+\sqrt{15}}{\sqrt{15}}\right)$

(B) $\log\left(\frac{4+\sqrt{3}+\sqrt{5}+\sqrt{15}}{\sqrt{15}}\right)$

(C) $\log\frac{(2+\sqrt{3})(2+\sqrt{5})\sqrt{5}}{\sqrt{3}}$

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

Answer: (A) $\log\left(\frac{4+2\sqrt{3}+2\sqrt{5}+\sqrt{15}}{\sqrt{15}}\right)$ · The council's preliminary key

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Q127 TS EAMCET 2018 · 5 May · Shift 1 MCQ

If $\sinh x = \frac{3}{4}$ and $\cosh y = \frac{5}{3}$ then $x + y =$

(A) $\log 2$

(B) $\log 6$

(C) $\log 3$

(D) $\log 5$

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

Q128 TS EAMCET 2018 · 5 May · Shift 2 MCQ

$\coth^{-1} 3 + \tanh^{-1} \frac{1}{3} - \operatorname{cosech}^{-1}\left(-\sqrt{3}\right) =$

(A) $\log\left(\frac{2}{\sqrt{3}}\right)$

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

(C) 0

(D) $\log 3\sqrt{3}$

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

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Q129 TS EAMCET 2018 · 4 May · Shift 1 MCQ

If $\cosh x = \frac{\sqrt{14}}{3}$, $\sinh x = \cos\theta$ and $-\pi < \theta < -\frac{\pi}{2}$ then $\sin\theta =$

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

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

Q130 TS EAMCET 2018 · 4 May · Shift 2 MCQ

If $\cosh\beta = \sec\alpha\cos\theta$, $\sinh\beta = \operatorname{cosec}\alpha\sin\theta$ then $\sinh^2\beta =$

(A) $\sin\alpha\cos\alpha$
(B) $\cos^2\alpha$
(C) $\sin^2\alpha$
(D) $\sin\alpha + \cos\alpha$

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

Q131 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

If $x = -\frac{1}{2}$, $\sinh^{-1}x + \operatorname{cosech}^{-1}x =$

(A) $\log_e\left(\frac{7-3\sqrt{5}}{2}\right)$
(B) $\log_e\left(\frac{3+\sqrt{5}}{2}\right)$
(C) $\log_e\left[\frac{(\sqrt{5}-1)(2+\sqrt{3})}{2}\right]$
(D) $\log_e\left[\frac{(\sqrt{5}+1)(2+\sqrt{3})}{2}\right]$

Answer: (A) $\log_e\left(\frac{7-3\sqrt{5}}{2}\right)$ · The council's preliminary key

Q132 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

If $u = \log\tan\left(\frac{\pi}{4} + \frac{\theta}{2}\right)$, then $\cosh u =$

(A) $\sec\theta$
(B) $\tan\theta$
(C) $\operatorname{cosec}\theta$
(D) $\cot\theta$

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

Q133 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

If $x = \log_e\left[\cot\left(\frac{\pi}{4} + \theta\right)\right]$ and $\theta \in \left(\frac{-\pi}{4}, \frac{\pi}{4}\right)$, then consider the following statements:

I: $\cosh x = \sec 2\theta$

II: $\sinh x = -\tan 2\theta$

Then which one of the following options is true?

(A) I is true and II is false

(B) I is false and II is true

(C) Both I and II are true

(D) Both I and II are false

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

Q134 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

$\operatorname{sech}^2\left(\tanh^{-1}\frac{1}{2}\right) + \operatorname{cosech}^2\left(\coth^{-1} 3\right) =$

(A) $\frac{35}{9}$

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

(C) $\frac{25}{4}$

(D) $\frac{35}{4}$

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

Q135 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

$\tanh^{-1}\frac{1}{2} + \coth^{-1} 3 =$

(A) $\log\sqrt{6}$

(B) $\log 6$

(C) $-\log\sqrt{6}$

(D) $-\log 6$

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

Q136 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

If $\sec\theta\cosh y = \operatorname{cosec} x$ and $\operatorname{cosec}\theta\sinh y = \sec x$, then $\sinh^2 y =$

(A) $\cos^2 x$

(B) $\cos x$

(C) $\sin^2 x$

(D) $\sin x$

Answer: (A) $\cos^2 x$ · The council's preliminary key

Q137 TS EAMCET 2017 · 12 May · Offline MCQ

If $\cosh^{-1} x = 2\log_e(\sqrt{2}+1)$, then $x =$

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

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

Q138 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

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

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

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

Q139 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

If $\tanh^2 x = \tan^2\theta$ then $\cosh 2x =$

(A) $\cos\theta$
(B) $\sin\theta$
(C) $\cos 2\theta$
(D) $\sec 2\theta$

Answer: (D) $\sec 2\theta$ · The council's preliminary key

Q140 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

If $a < 1$ and $2\text{Sinh}^{-1}\left(\frac{a}{\sqrt{1-a^2}}\right) = \log\left(\frac{1+x}{1-x}\right)$, then $x =$

(A) $2a$
(B) $3a$
(C) $4a$
(D) a

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

Q141 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

If $\sinh^{-1}(2) + \sinh^{-1}(3) = \alpha$, then $\sinh\alpha =$

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(A) $2\sqrt{5}+3\sqrt{10}$
(B) $3\sqrt{10}+3\sqrt{5}$
(C) $2\sqrt{10}+2\sqrt{5}$
(D) $2\sqrt{10}+3\sqrt{5}$

Answer: (D) $2\sqrt{10}+3\sqrt{5}$ · The council's preliminary key

Q142 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

If $x=\log_e\left[\cot\left(\frac{\pi}{4}+\theta\right)\right]$ where $|\theta|<\frac{\pi}{4}$ then $\sinh x=$

(A) $\sin 2\theta$
(B) $\cos 2\theta$
(C) $\tan 2\theta$
(D) $-\tan 2\theta$

Answer: (D) $-\tan 2\theta$ · The council's preliminary key

Q143 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

If $\sin x\cosh y=\cos\theta$ and $\cos x\sinh y=\sin\theta$, then $\sinh^2 y=$

(A) $\cosh^2 x$
(B) $\cos^2 x$
(C) $\sin^2 x$
(D) $\sinh^2 x$

Answer: (B) $\cos^2 x$ · The council's preliminary key

Q144 TS EAMCET 2016 · 15 May · Offline MCQ

For $\theta\in\left(0,\frac{\pi}{2}\right)$, $\operatorname{sech}^{-1}(\cos\theta)=$

(A) $\log\left|\tan\left(\frac{\pi}{6}+\frac{\theta}{2}\right)\right|$
(B) $\log\left|\tan\left(\frac{\pi}{3}+\frac{\theta}{2}\right)\right|$
(C) $\log\left|\tan\left(\frac{\pi}{4}+\frac{\theta}{2}\right)\right|$
(D) $\log\left|\tan\left(\frac{\pi}{4}-\frac{\theta}{2}\right)\right|$

Answer: (C) $\log\left|\tan\left(\frac{\pi}{4}+\frac{\theta}{2}\right)\right|$ · Official TGCHE final key

Q145 AP EAMCET 2016 · 29 Apr · Offline MCQ

If $\cosh(x)=\frac{5}{4}$, then $\cosh(3x)=$

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(A) $\frac{61}{16}$
(B) $\frac{63}{16}$
(C) $\frac{65}{16}$
(D) $\frac{61}{63}$

Answer: (C) $\frac{65}{16}$ · The council's preliminary key

Q146 AP EAMCET 2014 · 22 May · Offline MCQ

$\operatorname{sech}^{-1}\left(\frac{1}{2}\right) - \operatorname{cosech}^{-1}\left(\frac{3}{4}\right) =$

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

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

Q147 AP EAMCET 2013 · 10 May · Offline MCQ

$\tanh^{-1}\left(\frac{1}{2}\right) + \coth^{-1}(2) =$

(A) $\frac{1}{2}\log 3$
(B) $\frac{1}{2}\log 6$
(C) $\frac{1}{2}\log 12$
(D) $\log 3$

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

Q148 AP EAMCET 2012 · 12 May · Offline MCQ

$x = \log\left(\frac{1}{y} + \sqrt{1+\frac{1}{y^2}}\right) \Rightarrow y =$

(A) $\tanh x$
(B) $\coth x$
(C) $\operatorname{sech} x$
(D) $\operatorname{cosech} x$

Answer: (D) $\operatorname{cosech} x$ · Official APSCHE final key

Q149 AP EAMCET 2011 · 8 May · Offline MCQ

For $0 < x \leq \pi$, $\sinh^{-1}(\cot x) =$

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(A) $\log\left(\cot\frac{x}{2}\right)$
(B) $\log\left(\tan\frac{x}{2}\right)$
(C) $\log(1+\cot x)$
(D) $\log(1+\tan x)$

Answer: (A) $\log\left(\cot\frac{x}{2}\right)$ · The council's preliminary key

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Q150 AP EAMCET 2010 · 30 May · Offline MCQ

$\tanh^{-1}x = a\log\left(\frac{1+x}{1-x}\right), |x|<1 \Rightarrow a =$

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

Answer: (C) $\frac{1}{2}$ · Official APSCHE final key

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