EdLoop

EdLoop EAPCET

MATHEMATICS · EAPCET (EAMCET)

Indefinite Integration

Previous Year Questions with answers

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

Step-by-step solutions for every question: free in the EdLoop EAPCET app (Google Play) · pyq.edloop.in

What is in this PDF: every Indefinite Integration 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/

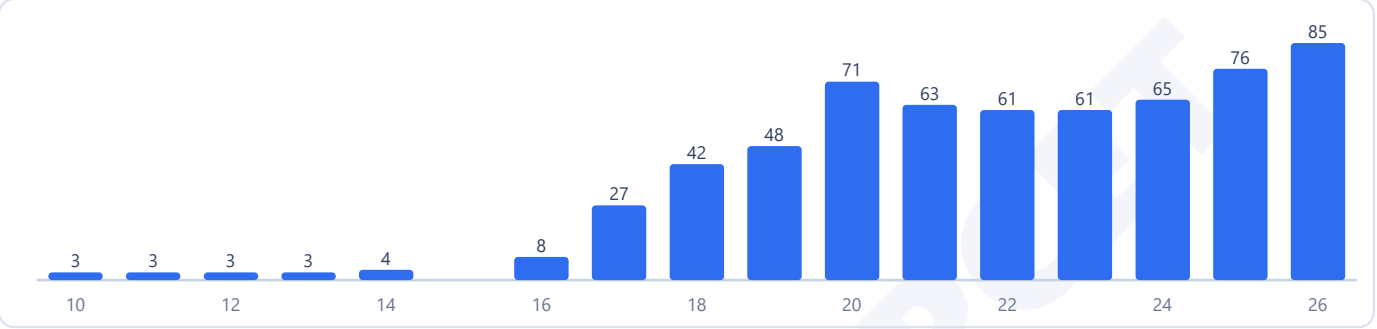
EdLoop EA

Chapter at a glance

5.6%	623	77 of 77	623 / 0
of Mathematics questions, 2022–2026	questions, 2010–2026	papers asked it, 2022–2026	MCQ / numerical, 2010–2026

Trend. Steady: 4.9 questions per paper in 2024–2026 against 3.9 in 2022–2023.

Questions per year



Counts are the questions we hold: 623 in 149 papers. 2 questions in this chapter came back in more than one paper.

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

Standard Integrals & Substitution	256
Trigonometric Integrals	134
Integration by Parts	130
Partial Fractions & Rational Functions	75
Special Techniques	28

How often it comes up

Indefinite Integration represents one of the largest mathematical concentrations in the entire EAPCET examination framework. Over the complete testing record from 2010 through 2026, the chapter contributed 623 questions across 149 evaluated exam papers, appearing in all 149 papers to average 4.2 questions per paper and a 5.2 percent subject share. In modern examination testing from 2022 to 2026, Indefinite Integration maintained this flawless appearance across all 77 sittings, producing 348 questions (averaging 4.5 questions per paper and a 5.6 percent subject share). This heavy question volume places the chapter at rank 5 among all 29 mathematics chapters.

Every paper in recent testing incorporates between four and five anti-derivative problems. In the three most recent testing years from 2024 to 2026, candidates solved 226 questions across 46 sittings (present in all 46 papers, averaging 4.9 questions per test and a 6.1 percent share). In the previous era from 2010 through 2021, the chapter delivered 275 questions across 72 sittings (appearing in all 72 papers, 3.8 per test, 4.8 percent share). Tracking historical trends, comparing early testing with the last three years shows the share is up, and comparing recent testing with the last three years also shows the share is up. Across individual state boards between 2022 and 2026, Andhra Pradesh administered 230 questions across 48 papers (all 48 papers, 4.8 per test, 6.0 percent share), while Telangana administered 118 questions across 29 papers (all 29 papers, 4.1 per test, 5.1 percent share).

Most-asked topics

Antidifferentiation questions span five major analytical techniques:

- **Standard Integrals & Substitution**: Supplying 256 total questions, with 149 delivered in recent sessions (tested through 2026). Key concepts encompass algebraic substitutions, completing the square under quadratic radicals, hyperbolic substitution identities, and reduction to standard inverse trigonometric forms.

- **Trigonometric Integrals**: Accounting for 134 total questions, with 74 emerging in modern papers (tested through 2026). Coverage includes rational trigonometric functions in sine and cosine, linear combinations of sine and cosine in numerator and denominator, even powers of secant and tangent, and half-angle tangent substitutions.
- **Integration by Parts**: Delivering 130 total questions, with 70 set in recent examinations (tested through 2026). Problems explore ILATE precedence, products of polynomials and exponentials or trigonometric functions, integrals of isolated inverse trigonometric or logarithmic functions, and reduction formulas.
- **Partial Fractions & Rational Functions**: Comprising 75 total questions, with 41 appearing in recent testing (tested through 2026). Focus areas involve rational integrands containing linear and quadratic factors, repeated roots, and algebraic symmetry substitutions.
- **Special Techniques**: Totaling 28 questions historically, with 14 appearing in recent years (last tested in 2026). Problems evaluate Euler substitutions, factoring high powers of x from radicands, and differential binomial forms.

What the questions look like

Examiners test clever algebraic rearrangements, standard linear trigonometric combinations, and integration by parts.

A staple problem presents an integrand with a linear combination of sin x and cos x in both numerator and denominator; candidates express the numerator as A times the denominator plus B times the derivative of the denominator, yielding an immediate sum of a linear term and a logarithm. Another ubiquitous template features rational fractions with high powers of x inside a radical in the denominator, such as one plus x to the fourth raised to a fractional power; students factor out the dominant power of x to create a clean derivative substitution. Integration by parts problems frequently ask for differences of integrals involving inverse functions like inverse sine and inverse cosine, or evaluate forms like e to the power x times f of x plus f prime of x.

How to practise it

Master the classic linear trigonometric decomposition: for a sin x plus b cos x divided by c sin x plus d cos x, set numerator equals A times denominator plus B times derivative of denominator. Equating coefficients gives two linear equations in A and B, producing an integral of A x plus B natural log of denominator.

For integrands of the form e to the x times f of x plus f prime of x, immediately recognize the anti-derivative as e to the x times f of x plus constant. When an integrand features square root of a quadratic in the denominator, complete the square to map the expression directly onto standard inverse hyperbolic or inverse trigonometric formulas. When faced with integrands containing x raised to an integer power next to a binomial radical like x to the power n plus one raised to a fractional power, practice pulling x to the power n out of the bracket to make one plus x to the negative n the substitution variable.

EdLoop EAPCET

Q1 AP EAPCET 2026 · 18 May · Shift 1 MCQ

$$\int \frac{1}{(x^4+1)^{5/4}}\,dx =$$

(A) $-\dfrac{4}{(x^4+1)^{1/4}}$
(B) $\dfrac{1}{(x^4+1)^{1/4}}$
(C) $\dfrac{x}{(x^4+1)^{1/4}}$
(D) $-\dfrac{2}{(x^4+1)^{1/4}}$

Answer: (C) $\dfrac{x}{(x^4+1)^{1/4}}$ · The council's preliminary key

Q2 AP EAPCET 2026 · 18 May · Shift 1 MCQ

$\int x^2(\log x)^2\,dx =$

(A) $\frac{1}{6}x^3[3(\log x)^2 - 3\log x + 4] + c$
(B) $\frac{1}{27}x^3[9(\log x)^2 - 6\log x + 2] + c$
(C) $\frac{1}{27}x^3[9(\log x)^2 + 6\log x + 2] + c$
(D) $\frac{1}{9}x^3[6(\log x)^2 - 3\log x + 1] + c$

Answer: (B) $\frac{1}{27}x^3[9(\log x)^2 - 6\log x + 2] + c$ · The council's preliminary key

Q3 AP EAPCET 2026 · 18 May · Shift 1 MCQ

If

$$\int \frac{\tan x}{1+\tan x+\tan^2 x}\,dx = x - \frac{K}{\sqrt{A}}\,\mathrm{Tan}^{-1}\left(\frac{K\tan x+1}{\sqrt{A}}\right) + c,$$

then the ordered pair $(K, A) =$

(A) $(2, 3)$
(B) $(2, 1)$
(C) $(-2, 1)$
(D) $(-2, 3)$

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

Q4 AP EAPCET 2026 · 18 May · Shift 1 MCQ

If $\int \frac{x^2-x+1}{x^2+1}e^{\mathrm{Cot}^{-1}x}dx = A(x)\,e^{\mathrm{Cot}^{-1}x} + c$, then $A(x) =$

(A) $-x$

(B) x

(C) $\sqrt{1-x}$

(D) $\sqrt{1+x}$

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

Q5 AP EAPCET 2026 · 18 May · Shift 1 MCQ

$$\int \frac{dx}{(1+\sqrt{x})\sqrt{x-x^2}} =$$

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

(B) $-\sqrt{\frac{1-\sqrt{x}}{1+\sqrt{x}}}+c$

(C) $-2\sqrt{\frac{1-\sqrt{x}}{1+\sqrt{x}}}+c$

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

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

Q6 AP EAPCET 2026 · 18 May · Shift 2 MCQ

The partial fraction decomposition of $\frac{x^4+24x^2+28}{(x^2+1)^3}$ is

(A) $\frac{1}{x^2+1}-\frac{22}{(x^2+1)^2}+\frac{5}{(x^2+1)^3}$

(B) $\frac{1}{x^2+1}+\frac{22}{(x^2+1)^2}+\frac{5}{(x^2+1)^3}$

(C) $\frac{1}{x^2+1}-\frac{22}{(x^2+1)^2}-\frac{5}{(x^2+1)^3}$

(D) $\frac{1}{x^2+1}+\frac{22}{(x^2+1)^2}-\frac{5}{(x^2+1)^3}$

Answer: (B) $\frac{1}{x^2+1}+\frac{22}{(x^2+1)^2}+\frac{5}{(x^2+1)^3}$ · The council's preliminary key

Q7 AP EAPCET 2026 · 18 May · Shift 2 MCQ

If $\int e^x\left(\frac{1}{n}+\tan nx\right)\sec nx\,dx=\frac{1}{n}(g(x)+k)=F(x)$ and $F(0)=1$, then $k=$

(A) n

(B) $n+1$

(C) $n-1$

(D) 1

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

Q8 AP EAPCET 2026 · 18 May · Shift 2 MCQ

For x > 0, if $\int \frac{1}{x^2+5x+7}\,dx = \frac{2}{\sqrt{3}}F(x)+k$ and $F\left(-\frac{5}{2}\right)=0$, then $\mathrm{Sin}(F(x)) =$

(A) $\frac{2x-5}{\sqrt{3}}$
(B) $\frac{2x+5}{2\sqrt{x^2+5x+7}}$
(C) $\frac{2\sqrt{x^2+5x+7}}{2x+5}$
(D) $\frac{2\sqrt{x^2+5x+7}}{\sqrt{3}}$

Answer: (B) $\frac{2x+5}{2\sqrt{x^2+5x+7}}$ · The council's preliminary key

Q9 AP EAPCET 2026 · 18 May · Shift 2 MCQ

If $\mathrm{F}(x) = \int x(\log x)^2\,dx$ and $F(e)=\frac{e^2}{4}$, then $\mathrm{F}(1) =$

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

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

Q10 AP EAPCET 2026 · 18 May · Shift 2 MCQ

If $\int e^{5x}x^n\,dx = F(n,x)+c$, then $5F(n,x)+nF(n-1,x) =$

(A) $F'(n,x)+k$
(B) $\frac{1}{5}F'(n,x)+k$
(C) $\frac{x\,F'(n,x)}{5}+k$
(D) $\frac{x^2\,F'(n,x)}{F(n,x)}+k$

Answer: (A) $F'(n,x)+k$ · The council's preliminary key

Q11 AP EAPCET 2026 · 18 May · Shift 2 MCQ

If

$$\int \frac{2x+5}{(x-1)(x+1)(x+4)(x+6)}\,dx = \frac{1}{10}\log\left(\frac{f(x)}{g(x)}\right)+c$$

and $\frac{f(-2)}{g(-2)}=6$, then $\frac{f(10)}{g(10)} =$

(A) $\frac{72}{77}$
(B) $\frac{144}{75}$
(C) $\frac{55}{63}$
(D) $\frac{70}{59}$

Answer: (A) $\frac{72}{77}$ · The council's preliminary key

EdLoop EAPCET

Q12 AP EAPCET 2026 · 15 May · Shift 1 MCQ

$$\int \frac{dx}{\cos 2x + \sin 2x + 2\sin^2 x} =$$

(A) $-\frac{1}{1+\tan x} + c$

(B) $-\frac{\tan x}{1+\tan x} + c$

(C) $-\cot x + c$

(D) $-\tan x + c$

Answer: (A) $-\frac{1}{1+\tan x} + c$ · The council's preliminary key

Q13 AP EAPCET 2026 · 15 May · Shift 1 MCQ

If $x > 0$, then $\int \frac{1}{\sqrt{x^4+2x^3+2x^2}} dx =$

(A) $-\frac{1}{\sqrt{2}}\text{Sinh}^{-1}\left(\frac{x+2}{x}\right) + c$

(B) $\frac{1}{\sqrt{2}}\text{Sinh}^{-1}\left(\frac{x+2}{x}\right) + c$

(C) $-\frac{1}{\sqrt{2}}\text{Cosh}^{-1}\left(\frac{x+2}{x}\right) + c$

(D) $\frac{1}{\sqrt{2}}\text{Cosh}^{-1}\left(\frac{x+2}{x}\right) + c$

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

Q14 AP EAPCET 2026 · 15 May · Shift 1 MCQ

If $\int \frac{x^3-1}{x^3+x^2}\,dx = f(x) + \log(g(x)) + c$, $f(1) = 2$ and $g(-3) = \frac{3}{4}$, then $f(-2) + g(-2) =$

(A) $-\frac{9}{2}$

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

(C) $\frac{9}{4}$

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

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

Q15 AP EAPCET 2026 · 15 May · Shift 1 MCQ

$\int \frac{\cos^3 x}{(1+\sin x)^4}\,dx =$

(A) $-\frac{\cos^4 x}{5(1+\sin x)^5} + c$

(B) $\frac{\cos^4 x}{5(1+\sin x)^5} + c$

(C) $\frac{\cos^4 x}{4(1+\sin x)^4} + c$

(D) $-\frac{\cos^4 x}{4(1+\sin x)^4} + c$

Answer: (D) $-\frac{\cos^4 x}{4(1+\sin x)^4} + c$ · The council's preliminary key

EdLoop EAPCET

Q16 AP EAPCET 2026 · 15 May · Shift 1 MCQ

$$\int \frac{\cos x - \sin x}{10 + \sin 2x}\, dx =$$

(A) $\frac{1}{2}\log(10 + \sin 2x) + c$
(B) $\frac{1}{3}\log(10 + \sin 2x) + c$
(C) $\frac{1}{3}\mathrm{Tan}^{-1}\left(\frac{\sin x + \cos x}{3}\right) + c$
(D) $\frac{1}{3}\mathrm{Tan}^{-1}(10 + \sin 2x) + c$

Answer: (C) $\frac{1}{3}\mathrm{Tan}^{-1}\left(\frac{\sin x + \cos x}{3}\right) + c$ · The council's preliminary key

Q17 AP EAPCET 2026 · 15 May · Shift 1 MCQ

$$\int_{\sqrt{2}}^{2} \frac{x}{(x^3 - x^2 + x - 1)(x + 1)}\, dx =$$

(A) $\frac{1}{2}\log\left(\frac{9}{4}\right)$
(B) $\frac{1}{4}\log\left(\frac{9}{5}\right)$
(C) $2\log 3$
(D) $3\log 2$

Answer: (B) $\frac{1}{4}\log\left(\frac{9}{5}\right)$ · The council's preliminary key

Q18 AP EAPCET 2026 · 15 May · Shift 2 MCQ

If $\frac{A}{(x+2)^2}$ is one of the partial fractions of $\frac{x^2+3x+5}{(2x+1)(x+2)^2}$, then $A =$

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

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

Q19 AP EAPCET 2026 · 15 May · Shift 2 MCQ

$\int \frac{1+x^2}{\sqrt{1-x^2}}dx =$

(A) $\frac{3}{2}\mathrm{Sin}^{-1}x - \frac{x}{2}\sqrt{1-x^2} + c$
(B) $\frac{3}{2}\mathrm{Sin}^{-1}x + \frac{x}{2}\sqrt{1-x^2} + c$
(C) $\frac{3}{4}\mathrm{Sin}^{-1}x - \frac{x^2}{2}\sqrt{1-x^2} + c$
(D) $\frac{2}{3}\mathrm{Sin}^{-1}x + \frac{x^2}{2}\sqrt{1-x^2} + c$

Answer: (A) $\frac{3}{2}\mathrm{Sin}^{-1}x - \frac{x}{2}\sqrt{1-x^2} + c$ · The council's preliminary key

EdLoop EAPCET

Q20 AP EAPCET 2026 · 15 May · Shift 2 MCQ

$$\int \frac{x-1}{(x+1)^3}e^x dx =$$

(A) $\frac{e^x}{(x+1)^2}+c$
(B) $\frac{-e^x}{(x+1)^2}+c$
(C) $\frac{2e^x}{(x+1)}+c$
(D) $\frac{-e^x}{(x+1)^4}+c$

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

Q21 AP EAPCET 2026 · 15 May · Shift 2 MCQ

$\int \frac{dx}{\sin x+\sin 2x} =$

(A) $\frac{1}{4}\log|1-\cos x|+\frac{1}{3}\log|1+\cos x|-\frac{2}{3}\log|1+\cos 2x|+c$
(B) $\frac{1}{3}\log|1-\cos x|+\frac{1}{4}\log|1+\cos x|+\frac{1}{3}\log|1+\cos 2x|+c$
(C) $\frac{1}{6}\log|1-\cos x|+\frac{1}{2}\log|1+\cos x|-\frac{2}{3}\log|1+2\cos x|+c$
(D) $\frac{1}{6}\log|1-\cos x|+\frac{1}{4}\log|1+\cos x|+\frac{2}{3}\log|1+2\cos x|+c$

Answer: (C) $\frac{1}{6}\log|1-\cos x|+\frac{1}{2}\log|1+\cos x|-\frac{2}{3}\log|1+2\cos x|+c$ · The council's preliminary key

Q22 AP EAPCET 2026 · 15 May · Shift 2 MCQ

If $\int \frac{\cos 8x+1}{\cot 2x-\tan 2x}\,dx = A\cos 8x+c$, then A =

(A) $-\frac{1}{16}$
(B) $\frac{1}{16}$
(C) $-\frac{1}{8}$
(D) $\frac{1}{8}$

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

Q23 AP EAPCET 2026 · 15 May · Shift 2 MCQ

If $\int x^5 e^{-4x^3}\,dx = \frac{1}{48}e^{-4x^3}f(x)+c$, then $f(x) =$

(A) $-2x^3-1$
(B) $-4x^3-1$
(C) $-2x^2+1$
(D) $4x^3+1$

Answer: (B) $-4x^3-1$ · The council's preliminary key

Q24 AP EAPCET 2026 · 14 May · Shift 1 MCQ

If $\frac{f(x)}{(x-1)(x-2)} = \frac{2}{x-2}-\frac{1}{x-1}$ and $f(x)+\frac{xf(x)}{(x-1)(x-2)} = g(x)+\frac{A}{x-2}+\frac{B}{x-1}$, then $g(A+B) =$

(A) 6
(B) 5
(C) 4
(D) 8

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

Q25 AP EAPCET 2026 · 14 May · Shift 1 MCQ

$$\int \frac{dx}{(x^5+1)^{6/5}} =$$

(A) $\frac{1}{\sqrt[5]{x^5+1}} + c$
(B) $\frac{\sqrt[5]{x^5+1}}{x} + c$
(C) $\frac{x}{\sqrt[5]{x^5+1}} + c$
(D) $\sqrt[5]{x^5+1} + c$

Answer: (C) $\frac{x}{\sqrt[5]{x^5+1}} + c$ · The council's preliminary key

Q26 AP EAPCET 2026 · 14 May · Shift 1 MCQ

$$\int \frac{\sin^2 x \cos^2 x}{\cos^6 x + \sin^6 x}\, dx =$$

(A) $\frac{1}{2}\mathrm{Tan}^{-1}(\tan^2 x) + c$
(B) $\frac{1}{3}\mathrm{Tan}^{-1}(\tan^2 x) + c$
(C) $\frac{1}{3}\mathrm{Tan}^{-1}(\tan^3 x) + c$
(D) $\mathrm{Tan}^{-1}(\tan^3 x) + c$

Answer: (C) $\frac{1}{3}\mathrm{Tan}^{-1}(\tan^3 x) + c$ · The council's preliminary key

Q27 AP EAPCET 2026 · 14 May · Shift 1 MCQ

If $\int (x+5)\sqrt{x-5}\, dx = \frac{2\sqrt{x-5}}{15} f(x) + c$, then $f(6) =$

(A) 5
(B) 20
(C) 100
(D) 53

Answer: (D) 53 · The council's preliminary key

Q28 AP EAPCET 2026 · 14 May · Shift 1 MCQ

$$\int \frac{x}{x^2 - 5x + 4}\, dx =$$

EdLoop EAPCET

(A) $\frac{1}{3}\log\frac{(x-4)^4}{|x-1|}+c$

(B) $\frac{4}{3}\log\frac{|x-4|}{(x-1)^4}+c$

(C) $-\frac{1}{3}\log\frac{(x-4)^2}{|x-1|}$

(D) $-\frac{4}{3}\log\frac{|x-4|}{(x-1)^4}+c$

Answer: (A) $\frac{1}{3}\log\frac{(x-4)^4}{|x-1|}+c$ · The council's preliminary key

Q29 AP EAPCET 2026 · 14 May · Shift 1 MCQ

$$\int\frac{e^{2x}-1}{e^{2x}+e^x+1}dx=$$

(A) $\log(e^{2x}+e^x+1)+x+c$

(B) $\log(e^{2x}+e^x+1)-x+c$

(C) $\log\left(\frac{e^{2x}+e^x+1}{e^{2x}}\right)+c$

(D) $\log\left|\frac{e^{2x}+e^x+1}{e^{2x}-1}\right|+c$

Answer: (B) $\log(e^{2x}+e^x+1)-x+c$ · The council's preliminary key

Q30 AP EAPCET 2026 · 14 May · Shift 2 MCQ

One of the partial fractions of $\frac{2x^2+x-3}{(x^2+2)(3x-1)}$ is

(A) $\frac{22}{19(3x-1)}$

(B) $\frac{20x-13}{19(x^2+2)}$

(C) $\frac{20x+13}{19(x^2+2)}$

(D) $\frac{22}{3x-1}$

Answer: (C) $\frac{20x+13}{19(x^2+2)}$ · The council's preliminary key

Q31 AP EAPCET 2026 · 14 May · Shift 2 MCQ

If $\int\frac{2\cos x+3\sin x}{3\cos x+4\sin x}dx=Ax+B\log|3\cos x+4\sin x|+c$, then $A\cdot B=$

(A) $-\frac{18}{625}$

(B) $\frac{18}{625}$

(C) $-\frac{18}{25}$

(D) $\frac{18}{25}$

Answer: (A) $-\frac{18}{625}$ · The council's preliminary key

Q32 AP EAPCET 2026 · 14 May · Shift 2 MCQ

If $\int\frac{1}{\sin^3 x+\cos^3 x}dx=A\log\left|\frac{\sqrt{2}+t}{\sqrt{2}-t}\right|+B\,\mathrm{Tan}^{-1}(t)+c$, then $\left(\frac{B}{A},t\right)=$

EdLoop EAPCET

(A) $(2\sqrt{2}, \sin x + \cos x)$
(B) $\left(\frac{\sqrt{2}}{9}, \sin x + \cos x\right)$
(C) $\left(\frac{\sqrt{2}}{9}, \sin x - \cos x\right)$
(D) $(2\sqrt{2}, \sin x - \cos x)$

Answer: (D) $(2\sqrt{2}, \sin x - \cos x)$ · The council's preliminary key

Q33 AP EAPCET 2026 · 14 May · Shift 2 MCQ

If $\int 4^x\, 4^{4^x} 4^{4^{4^x}}\, dx = A\, 4^{4^{4^x}} + c$, then $A =$

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

Answer: (C) $\frac{1}{(\ln 4)^3}$ · The council's preliminary key

Q34 AP EAPCET 2026 · 14 May · Shift 2 MCQ

If $\int \frac{dx}{2\sin^2 x + \sin 2x} = \frac{1}{2}\log|f(x)| + c$ and $f\left(\frac{\pi}{4}\right) = \frac{1}{2}$, then $f(x) =$

(A) $\frac{\sin x}{1+\sin x}$
(B) $\frac{\cos x}{1+\cos x}$
(C) $\frac{\tan x}{1+\tan x}$
(D) $\frac{\cot x}{1+\cot x}$

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

Q35 AP EAPCET 2026 · 14 May · Shift 2 MCQ

If $\int e^x \frac{x^3+3x^2+4}{(x+1)^3}\, dx = e^x f(x) + c$, then $f(x) =$

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

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

Q36 AP EAPCET 2026 · 13 May · Shift 1 MCQ

If $\frac{x}{(x^2+1)^2(x-1)} = \frac{Ax+B}{x^2+1} + \frac{Cx+D}{(x^2+1)^2} + \frac{E}{x-1}$, then $A+B-C+2D =$

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

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

Q37 AP EAPCET 2026 · 13 May · Shift 1 MCQ

If $\int \frac{1}{x^2+4x+\alpha}\,dx = \frac{1}{2\sqrt{2}}\mathrm{Tan}^{-1}\left(\frac{x+2}{2\sqrt{2}}\right)+c$, then $\int \frac{1}{x^2+4x-\alpha}\,dx =$

(A) $\frac{1}{4}\log\left(\frac{x-12}{x+2}\right)+k$
(B) $\frac{1}{8}\log\left(\frac{x-2}{x+6}\right)+k$
(C) $\frac{1}{8}\log\left(\frac{x+6}{x+8}\right)+k$
(D) $\frac{1}{4}\log\left(\frac{x-12}{x+16}\right)+k$

Answer: (B) $\frac{1}{8}\log\left(\frac{x-2}{x+6}\right)+k$ · The council's preliminary key

Q38 AP EAPCET 2026 · 13 May · Shift 1 MCQ

If $\int \frac{2\sin x+a\cos x}{b\sin x+4\cos x}\,dx = \frac{2}{5}x-\frac{1}{5}\log(b\sin x+4\cos x)+c$, then $a+b=$

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

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

Q39 AP EAPCET 2026 · 13 May · Shift 1 MCQ

If $\int(4\sin\theta+\cos\theta)\cot\theta\cos\theta\,d\theta = 2\theta+\sin 2\theta+\log(\sin\theta)+f(2\theta)+c$ and $f(0)=\frac{1}{2}$, then $f(x)=$

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

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

Q40 AP EAPCET 2026 · 13 May · Shift 1 MCQ

If $I_n=\int \sin^n x\,dx$, then $I_6-\frac{5}{6}I_4=$

(A) $\frac{-\sin^5 x \cos x}{6}$

(B) $\frac{\sin^5 x \cos x}{5}$

(C) $\frac{-\sin^5 x \cos^2 x}{6}$

(D) $\frac{\sin^5 x \cos^2 x}{5}$

Answer: (A) $\frac{-\sin^5 x \cos x}{6}$ · The council's preliminary key

Q41 AP EAPCET 2026 · 13 May · Shift 2 MCQ

If $\frac{x^4}{x^4+3x^2+2} = A + \frac{Bx+C}{x^2+p} + \frac{Dx+E}{x^2+q}$ and $p < q$, then $\frac{A-B+C+D-E}{p+q} =$

(A) 1

(B) 2

(C) 3

(D) 4

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

Q42 AP EAPCET 2026 · 13 May · Shift 2 MCQ

$$\int \left(\frac{(\log x - 1)}{1+(\log x)^2}\right)^2 dx =$$

(A) $\frac{xe^x}{1+x^2} + c$

(B) $\frac{x}{1+(\log x)^2} + c$

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

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

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

Q43 AP EAPCET 2026 · 13 May · Shift 2 MCQ

$\int \frac{dx}{x^2(x^4+1)^{3/4}} =$

(A) $\left(1+\frac{1}{x^4}\right)^{3/4} + c$

(B) $\left(1+\frac{1}{x^6}\right)^{1/2} + c$

(C) $-\left(1+\frac{1}{x^4}\right)^{-1/4} + c$

(D) $-\left(1+\frac{1}{x^4}\right)^{1/4} + c$

Answer: (D) $-\left(1+\frac{1}{x^4}\right)^{1/4} + c$ · The council's preliminary key

Q44 AP EAPCET 2026 · 13 May · Shift 2 MCQ

If $\int \frac{dx}{\cos^3 x\sqrt{2\sin 2x}} = (\tan x)^A + K(\tan x)^B + c$, then $A + B + K =$

(A) $\frac{16}{5}$
(B) $\frac{21}{5}$
(C) $\frac{12}{5}$
(D) $\frac{7}{10}$

Answer: (A) $\frac{16}{5}$ · The council's preliminary key

Q45 AP EAPCET 2026 · 13 May · Shift 2 MCQ

If $\int \frac{2x+5}{\sqrt{7-6x-x^2}}dx = A\sqrt{7-6x-x^2} + B\,\mathrm{Sin}^{-1}\left(\frac{x+3}{4}\right) + c$ then the ordered pair $(A, B) =$

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

Answer: (A) $(-2, -1)$ · The council's preliminary key

Q46 AP EAPCET 2026 · 13 May · Shift 2 MCQ

$$\int \frac{dx}{\cos x + \sqrt{3}\sin x} =$$

(A) $\log\left(\tan\left(\frac{x}{2} + \frac{\pi}{12}\right)\right) + c$
(B) $\log\left(\tan\left(\frac{x}{2} - \frac{\pi}{12}\right)\right) + c$
(C) $\frac{1}{2}\log\left(\tan\left(\frac{x}{2} + \frac{\pi}{12}\right)\right) + c$
(D) $\frac{1}{2}\log\left(\tan\left(\frac{x}{2} - \frac{\pi}{12}\right)\right) + c$

Answer: (C) $\frac{1}{2}\log\left(\tan\left(\frac{x}{2} + \frac{\pi}{12}\right)\right) + c$ · The council's preliminary key

Q47 AP EAPCET 2026 · 12 May · Shift 1 MCQ

If $\frac{2x^3-7x^2-2x+20}{x^2-5x+6} = Ax + B + \frac{C}{x-2} + \frac{D}{x-3}$, then $A + B + C + D =$

(A) 2
(B) 3
(C) 5
(D) 6

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

Q48 AP EAPCET 2026 · 12 May · Shift 1 MCQ

If $\int \frac{x^7+x^{11}}{(1+2x^4-5x^8)^2}dx = \frac{x^n}{8(1+2x^4-5x^8)} + c$, then $n =$

EdLoop EAPCET

(A) 10
(B) 8
(C) 16
(D) 12

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

Q49 AP EAPCET 2026 · 12 May · Shift 1 MCQ

If $g(x)$ and $f(x)$ are twice differentiable functions, then

$$\int (f''(x)g(x) - g''(x)f(x))\,dx =$$

(A) $g^2(x)\dfrac{d}{dx}\left(\dfrac{f(x)}{g(x)}\right)$
(B) $f^2(x)\dfrac{d}{dx}\left(\dfrac{f'(x)}{g'(x)}\right)$
(C) $\dfrac{d}{dx}\left(\dfrac{f''(x)}{g''(x)}\right)g^2(x)$
(D) $\dfrac{d}{dx}\left(\dfrac{f'(x)}{g(x)}\right)g^2(x)$

Answer: (A) $g^2(x)\dfrac{d}{dx}\left(\dfrac{f(x)}{g(x)}\right)$ · The council's preliminary key

---

Q50 AP EAPCET 2026 · 12 May · Shift 1 MCQ

If $f_n(x) = \int \frac{1-\log x}{x^n}\,dx$, then $f_2(e) - f_3(e) =$

(A) $\frac{1}{4e^2}[4e-1]+c$
(B) $\frac{1}{e^2} - \frac{2}{e} + c$
(C) $\frac{e-1}{e+1} + c$
(D) $\frac{1}{2e}\left[\frac{1+e}{e}\right] + c$

Answer: (A) $\frac{1}{4e^2}[4e-1]+c$ · The council's preliminary key

---

Q51 AP EAPCET 2026 · 12 May · Shift 1 MCQ

If $\int e^x\left(\frac{2-x^2}{(2+x)^{3/2}\sqrt{2-x}}\right)dx = e^x f(x) + c$, then the domain of $f(x)$ is

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

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

EdLoop EAPCET

Q52 AP EAPCET 2026 · 12 May · Shift 2 MCQ

If $\frac{4x}{(x^2-1)^2} = \frac{A_1}{x-1} + \frac{A_2}{(x-1)^2} + \frac{A_3}{x+1} + \frac{A_4}{(x+1)^2}$, then $A_1 + A_2 + A_3 + A_4 =$

(A) -2

(B) 1

(C) 0

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

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

Q53 AP EAPCET 2026 · 12 May · Shift 2 MCQ

If $\int \frac{a^{x+1}}{a^x+a^{-x}}\,dx = A\log(a^x + a^{-x}) + Bx + C$ then $\frac{A}{B} =$

(A) $\log_a e$

(B) $\log_e a$

(C) $\frac{a}{\log_e a}$

(D) $\frac{a}{\log_a e}$

Answer: (A) $\log_a e$ · The council's preliminary key

Q54 AP EAPCET 2026 · 12 May · Shift 2 MCQ

$$\int \frac{1}{1+\tan 2\theta}\,d\theta =$$

(A) $\frac{1}{2} + \frac{1}{2}\log(\sin 2\theta + \cos 2\theta) + c$

(B) $\frac{1}{2}\theta + \frac{1}{4}\log(\sin\theta + \cos\theta) + c$

(C) $\frac{1}{2}\theta + \frac{1}{4}\log\cos 2\theta + \frac{1}{4}\log(1+\tan 2\theta) + c$

(D) $\frac{1}{4}\theta + \frac{1}{2}\log\cos 2\theta + \frac{1}{2}\log(1+\tan 2\theta) + c$

Answer: (C) $\frac{1}{2}\theta + \frac{1}{4}\log\cos 2\theta + \frac{1}{4}\log(1+\tan 2\theta) + c$ · The council's preliminary key

Q55 AP EAPCET 2026 · 12 May · Shift 2 MCQ

If $\int \frac{\sin 2\theta}{(1+\sin\theta)(3-\cos 2\theta)}d\theta = \frac{1}{2}\,\mathrm{Tan}^{-1}(\sin\theta) + \frac{1}{4}\log(f(\theta)) + c$ then $f\left(\frac{\pi}{2}\right) - f(0) =$

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

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

(C) 0

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

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

Q56 AP EAPCET 2026 · 12 May · Shift 2 MCQ

If

$$\int \frac{3x^2+5x+4}{\sqrt{x^2+x+1}}\,dx = A\sqrt{x^2+x+1} + \frac{6x}{4}\sqrt{x^2+x+1} + B\,\text{Sinh}^{-1}\frac{2x+1}{\sqrt{3}} + c,$$

then $A+2B=$

(A) 5

(B) 8

(C) $\frac{31}{8}$

(D) $\frac{22}{5}$

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

Q57 AP EAPCET 2026 · 12 May · Shift 2 MCQ

If $\int e^{\sin^3 x}(\sin^8 x + 2\sin^5 x)\cos x\,dx = \frac{1}{3}e^{\sin^3 x} f(x) + c$, then $f(x) =$

(A) $\sin^8 x$

(B) $\sin^6 x$

(C) $\cos^8 x$

(D) $\cos^6 x$

Answer: (B) $\sin^6 x$ · The council's preliminary key

Q58 TS EAPCET 2026 · 11 May · Shift 1 MCQ

If $\frac{2x^6+3x^4+1}{(x^2+2)^4} = \frac{Ax+P}{x^2+2} + \frac{Bx+Q}{(x^2+2)^2} + \frac{Cx+R}{(x^2+2)^3} + \frac{Dx+T}{(x^2+2)^4}$, then $3P+2Q+R+4T=$

(A) -12

(B) 30

(C) -3

(D) 24

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

Q59 TS EAPCET 2026 · 11 May · Shift 1 MCQ

$$\int \frac{\sin 4x}{\sin x}\,dx =$$

(A) $4(3\sin x + 3\sin 3x) + c$

(B) $\frac{4}{3}(2\sin^3 x + 3\sin x) + c$

(C) $4(3\sin x - 3\sin x) + c$

(D) $\frac{4}{3}(3\sin x - 2\sin^3 x) + c$

Answer: (D) $\frac{4}{3}(3\sin x - 2\sin^3 x) + c$ · The council's preliminary key

Q60 TS EAPCET 2026 · 11 May · Shift 1 MCQ

$$\int \frac{3x\sec^2\sqrt{9x^2-12x+1}-2\sec^2\sqrt{(3x-2)^2-3}}{\sqrt{9x^2-12x+1}}\,dx =$$

(A) $\sqrt{9x^2-12x+1}+c$

(B) $\frac{1}{3}\cos\sqrt{9x^2-12x+1}+c$

(C) $\frac{1}{2\sqrt{9x^2-12x+1}}+c$

(D) $\frac{1}{3}\tan\sqrt{9x^2-12x+1}+c$

Answer: (D) $\frac{1}{3}\tan\sqrt{9x^2-12x+1}+c$ · The council's preliminary key

Q61 TS EAPCET 2026 · 11 May · Shift 1 MCQ

$\int \frac{1}{\sin x\cos 2x}\,dx =$

(A) $\frac{1}{2}\log\left|\frac{\cos x+1}{\cos x-1}\right|-\frac{1}{\sqrt{2}}\log\left|\frac{\sqrt{2}\cos x+1}{\sqrt{2}\cos x-1}\right|+c$

(B) $\frac{1}{2}\log\left|\frac{\cos x+1}{\cos x-1}\right|+\frac{1}{\sqrt{2}}\log\left|\frac{\sqrt{2}\cos x+1}{\sqrt{2}\cos x-1}\right|+c$

(C) $\frac{1}{2}\log\left|\frac{\cos x-1}{\cos x+1}\right|-\frac{1}{\sqrt{2}}\log\left|\frac{\sqrt{2}\cos x-1}{\sqrt{2}\cos x+1}\right|+c$

(D) $\frac{1}{2}\log\left|\frac{\cos x-1}{\cos x+1}\right|+\frac{1}{\sqrt{2}}\log\left|\frac{\sqrt{2}\cos x-1}{\sqrt{2}\cos x+1}\right|+c$

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

Q62 TS EAPCET 2026 · 11 May · Shift 1 MCQ

$$\int \frac{\cos 2x+\sin 4x}{\sqrt{3\sin 2x-2}}\,dx =$$

(A) $\frac{1}{27}\sqrt{3\sin 2x-2}\,(6\sin 2x+17)+c$

(B) $\frac{\sqrt{3\sin 2x-2}}{27(6\sin 2x+17)}+c$

(C) $\frac{27(6\sin 2x+17)}{\sqrt{3\sin 2x-2}}+c$

(D) $27\sqrt{3\sin 2x-2}\,(6\sin 2x+17)+c$

Answer: (A) $\frac{1}{27}\sqrt{3\sin 2x-2}\,(6\sin 2x+17)+c$ · The council's preliminary key

Q63 TS EAPCET 2026 · 11 May · Shift 2 MCQ

If

$$\frac{x+3}{(1-x)^2(1+x^2)}=\frac{A}{(1-x)}+\frac{B}{(1-x)^2}+\frac{Cx+D}{2(1+x^2)}$$

then $B^2+C^2+D^2=$

(A) $\frac{3}{4}$
(B) $4\frac{1}{2}$
(C) 14
(D) 4

Answer: (C) 14 · The council's preliminary key

Q64 TS EAPCET 2026 · 11 May · Shift 2 MCQ

If $\int \frac{e^{\cos x}\sin x}{e^{\cos x}+e^{-\cos x}}dx = -\frac{1}{2}\left[f(x)+\log\left(e^{\cos x}+e^{-\cos x}\right)\right]+c$ and $f\left(\frac{\pi}{3}\right)=\frac{1}{2}$, then the number of points at which $f(x)$ attains the maximum value in $[-2\pi, 2\pi]$ is

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

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

Q65 TS EAPCET 2026 · 11 May · Shift 2 MCQ

If $\int \frac{\cos\left(\frac{7x}{2}\right)}{\cos\left(\frac{x}{2}\right)}dx = a\sin x + b\sin 2x + c\sin^3 x - dx + \mathrm{k}$, then $a+b+c+d=$

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

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

Q66 TS EAPCET 2026 · 11 May · Shift 2 MCQ

$$\int \frac{\sin^2 x \tan x}{\cos^6 x + \sin^4 x\cos^2 x + \cos^4 x \sin^2 x + \sin^6 x}\,dx =$$

(A) $\log\left(\sin^4 x + \cos^4 x\right)+c$
(B) $\frac{1}{4}\log\left(\sin^4 x + \cos^4 x\right)+c$
(C) $\frac{1}{4}\log\left(1+\tan^4 x\right)+c$
(D) $\log\left(1+\tan^4 x\right)+c$

Answer: (C) $\frac{1}{4}\log\left(1+\tan^4 x\right)+c$ · The council's preliminary key

Q67 TS EAPCET 2026 · 11 May · Shift 2 MCQ

$$\int \frac{x^7-1}{x^8\sqrt{1-2x^7+7x^{14}}}\,dx =$$

(A) $\frac{\sqrt{1-2x^7+7x^{14}}}{7x^7}+c$

(B) $\log\left(\sqrt{1-2x^7+7x^{14}}\right)+c$

(C) $\frac{1}{x^8}-\frac{1}{x^{15}}+c$

(D) $\sqrt{\frac{1}{x^8}-\frac{2}{x^7}+\frac{7}{x^{14}}}+c$

Answer: (A) $\frac{\sqrt{1-2x^7+7x^{14}}}{7x^7}+c$ · The council's preliminary key

Q68 TS EAPCET 2026 · 10 May · Shift 1 MCQ

$\int \frac{\tan 2x}{\cos^4 x}\,dx =$

(A) $\tan^2 x-\log\left(1-\tan^2 x\right)^2+c$

(B) $-\tan^2 x-\log\left(1-\tan^2 x\right)^2+c$

(C) $-\tan^2 x+\log\left(1-\tan^2 x\right)+c$

(D) $\tan^2 x+\log\left(1-\tan^2 x\right)+c$

Answer: (B) $-\tan^2 x-\log\left(1-\tan^2 x\right)^2+c$ · The council's preliminary key

Q69 TS EAPCET 2026 · 10 May · Shift 1 MCQ

If $\int \frac{e^x+3}{\sqrt{e^x+4}}\,dx=2\sqrt{e^x+4}+\frac{3}{2}\log\left|\frac{f(x)-2}{f(x)+2}\right|+c$ and $f(0)=\sqrt{5}$, then $f(\log_e 5)=$

(A) $\sqrt{5}$

(B) 2

(C) 3

(D) $\sqrt{7}$

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

Q70 TS EAPCET 2026 · 10 May · Shift 1 MCQ

If $\int \frac{2^x}{x}\left(1+(\log 2)\log x^x\right)dx=f(x)+c$ and $f(1)=0$ then $f(e)=$

(A) 1

(B) 2^e

(C) $\frac{2^e}{e}$

(D) 2^{e-1}

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

Q71 TS EAPCET 2026 · 10 May · Shift 1 MCQ

$$\int \frac{dx}{10\cos^2 x+\cos 2x+5}=$$

EdLoop EAPCET

(A) $\frac{1}{4}\text{Tan}^{-1}\left(\frac{\tan x}{2}\right)+c$
(B) $\frac{1}{8}\text{Tan}^{-1}\left(\frac{\tan x}{2}\right)+c$
(C) $\frac{1}{4}\text{Tan}^{-1}\left(\frac{\tan x}{5}\right)+c$
(D) $\frac{1}{8}\text{Tan}^{-1}\left(\frac{\tan x}{5}\right)+c$

Answer: (B) $\frac{1}{8}\text{Tan}^{-1}\left(\frac{\tan x}{2}\right)+c$ · The council's preliminary key

Q72 TS EAPCET 2026 · 10 May · Shift 2 MCQ

If $\frac{x}{x^4+1}=\frac{Ax+B}{f(x)}+\frac{Cx+D}{g(x)}$, $f(x)g(x)=x^4+1$ and $f(1)=2+\sqrt{2}$, then $\frac{1}{D^3}+\frac{2}{B}=$

(A) $12\sqrt{2}$
(B) $\frac{1}{16\sqrt{2}}$
(C) 1
(D) 0

Answer: (A) $12\sqrt{2}$ · The council's preliminary key

Q73 TS EAPCET 2026 · 10 May · Shift 2 MCQ

$\int \frac{1}{2\cot x-3\tan x}\,dx=$

(A) $-\frac{1}{10}\log|2-5\sin^2 x|+c$
(B) $\frac{1}{10}\log|3+2\cos^2 x|+c$
(C) $-\frac{1}{10}\log|2\cot x+3\tan x|+c$
(D) $\frac{1}{10}\log|2\cot x-3\tan x|+c$

Answer: (A) $-\frac{1}{10}\log|2-5\sin^2 x|+c$ · The council's preliminary key

Q74 TS EAPCET 2026 · 10 May · Shift 2 MCQ

$\int e^{\tan x}\left(\tan^7 x+5\tan^6 x+\tan^5 x+5\tan^4 x\right)dx=$

(A) $e^{\tan x}\left(\frac{\tan^8 x}{8}\right)+c$
(B) $e^{\tan x}\left(\tan^5 x\right)+c$
(C) $e^{\tan x}\left(\frac{\tan^6 x}{6}\right)+c$
(D) $e^{\tan x}\left(\tan^7 x\right)+c$

Answer: (B) $e^{\tan x}\left(\tan^5 x\right)+c$ · The council's preliminary key

Q75 TS EAPCET 2026 · 10 May · Shift 2 MCQ

$\int \sin^3 2x\sin^{26} x\,dx=$

EdLoop EAPCET

(A) $8\left(\frac{\sin^{27}x}{27}-\frac{\sin^{29}x}{29}\right)+c$

(B) $4\left(\frac{\sin^{28}x}{14}-\frac{\sin^{30}x}{15}\right)+c$

(C) $8\left(\frac{\sin^{31}x}{31}-\frac{\sin^{33}x}{33}\right)+c$

(D) $4\left(\frac{\sin^{30}x}{15}-\frac{\sin^{32}x}{16}\right)+c$

Answer: (D) $4\left(\frac{\sin^{30}x}{15}-\frac{\sin^{32}x}{16}\right)+c$ · The council's preliminary key

Q76 TS EAPCET 2026 · 10 May · Shift 2 MCQ

If $\int\frac{3e^{x}+5e^{-x}}{1-4e^{-x}}dx=3f(x)+\frac{5}{4}g(x)+\frac{53}{4}\log h(x)+c$, $f(0)=1$, $g(0)=0$ and $h(0)=3$, then $f(1)+g(1)+h(1)=$

(A) 4

(B) -4

(C) 3

(D) -3

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

Q77 TS EAPCET 2026 · 9 May · Shift 1 MCQ

If $\frac{x^2+1}{(x^4+5x^2+6)(x^6+x^4)}=\frac{A}{x^4}+\frac{B}{x^2}+\frac{C}{x^2+2}+\frac{D}{x^2+3}$, then $A-B=$

(A) $\frac{13}{36}$

(B) $\frac{11}{36}$

(C) $\frac{2}{9}$

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

Answer: (B) $\frac{11}{36}$ · The council's preliminary key

Q78 TS EAPCET 2026 · 9 May · Shift 1 MCQ

$\int \mathrm{Sin}^{-1}x\,dx-\int \mathrm{Cos}^{-1}x\,dx=$

(A) $x\left[\mathrm{Sin}^{-1}x-\mathrm{Cos}^{-1}x\right]-2\sqrt{1-x^2}+c$

(B) $x\left[2\mathrm{Sin}^{-1}x+\frac{\pi}{2}\right]-2\sqrt{1-x^2}+c$

(C) $x\left[\mathrm{Sin}^{-1}x-\mathrm{Cos}^{-1}x\right]+2\sqrt{1-x^2}+c$

(D) $x\left[\frac{\pi}{2}+\mathrm{Cos}^{-1}x\right]+2\sqrt{1-x^2}+c$

Answer: (C) $x\left[\mathrm{Sin}^{-1}x-\mathrm{Cos}^{-1}x\right]+2\sqrt{1-x^2}+c$ · The council's preliminary key

Q79 TS EAPCET 2026 · 9 May · Shift 1 MCQ

$$\int \frac{dx}{\sqrt{4x^2+11x+6}} = \frac{1}{2}\text{Cosh}^{-1}\left(\frac{f(x)}{5}\right)+c \text{ and } f(1)=19, \text{ then } f(2)=$$

(A) 11
(B) 15
(C) 23
(D) 27

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

Q80 TS EAPCET 2026 · 9 May · Shift 1 MCQ

If $\int \log x\sqrt{\left(\frac{\log x}{x}\right)^2+\frac{1}{x^2}}\,dx = \frac{f(x)}{3}\sqrt{1+(\log x)^2}+c$ and $f(1)=1$ then $f(e)=$

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

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

Q81 TS EAPCET 2026 · 9 May · Shift 1 MCQ

If $\int \frac{1}{1+\cos x}dx = \frac{1}{f\left(\frac{x}{2}\right)}+c_1$, then $\int f(x)dx =$

(A) $\log|\sin x|+c$
(B) $\log|\cos x|+c$
(C) $-\text{cosec}^2 x+c$
(D) $\tan x+c$

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

Q82 TS EAPCET 2026 · 9 May · Shift 2 MCQ

$\int \frac{\cos x+\sin 2x}{1-\sin x-2\sin^2 x}\,dx =$

(A) $\frac{1}{3}\log\left(\frac{(1-2\sin x)^2}{|1+\sin x|}\right)+c$
(B) $\frac{1}{3}\log\left(\frac{(|1+\sin x|)^{-1}}{(1-2\sin x)^2}\right)+c$
(C) $\frac{1}{3}\log\left(\frac{(1+2\sin x)^2}{|1-\sin x|}\right)+c$
(D) $\frac{1}{3}\log\left(\frac{|1-\sin x|}{(1+2\sin x)^2}\right)+c$

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

EdLoop EAPCET

Q83 TS EAPCET 2026 · 9 May · Shift 2 MCQ

$$\int \frac{\cos x}{\sqrt{16\cos^2 x + 9}}\,dx =$$

(A) $\frac{1}{4}\text{Sinh}^{-1}\left(\frac{4\sin x}{5}\right) + c$
(B) $\frac{1}{4}\text{Sin}^{-1}\left(\frac{4\sin x}{5}\right) + c$
(C) $\frac{1}{4}\text{Cosh}^{-1}\left(\frac{4\sin x}{3}\right) + c$
(D) $\frac{1}{4}\text{Cos}^{-1}\left(\frac{4\cos x}{3}\right) + c$

Answer: (B) $\frac{1}{4}\text{Sin}^{-1}\left(\frac{4\sin x}{5}\right) + c$ · The council's preliminary key

Q84 TS EAPCET 2026 · 9 May · Shift 2 MCQ

If $\int \left(e^{2x} + 2e^x\right)\sqrt{e^{2x} - 4e^x + 5}\,dx = \frac{1}{3}\left[f(x)\right]^{3/2} + 4\left[\frac{e^x - 2}{2}\sqrt{f(x)} + \frac{1}{2}g(x)\right] + c$, then $f(0) =$

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

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

Q85 TS EAPCET 2026 · 9 May · Shift 2 MCQ

$$\int \frac{1}{2\cot x - 3\tan x}\,dx =$$

(A) $\frac{1}{5}\log\left|2\cos^2 x - 3\sin^2 x\right| + c$
(B) $-\frac{1}{10}\log\left|2 - 5\sin^2 x\right| + c$
(C) $-\frac{1}{5}\log\left|2 - 5\sin^2 x\right| + c$
(D) $\frac{1}{10}\log\left|2\cos^2 x - 3\sin^2 x\right| + c$

Answer: (B) $-\frac{1}{10}\log\left|2 - 5\sin^2 x\right| + c$ · The council's preliminary key

Q86 AP EAPCET 2025 · 27 May · Shift 1 MCQ

If $\int \frac{5\tan x}{\tan x - 2}\,dx = ax + b\log\left|\sin x - 2\cos x\right| + c$, then $a + b =$

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

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

Q87 AP EAPCET 2025 · 27 May · Shift 1 MCQ

$\int x\cos^{-1}\left(\frac{1-x^2}{1+x^2}\right)dx\ (x > 0) =$

(A) $-x+(1+x^2)\tan^{-1}x+c$

(B) $x-(1+x^2)\cot^{-1}x+c$

(C) $-x+(1+x^2)\cot^{-1}x+c$

(D) $x-(1+x^2)\tan^{-1}x+c$

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

Q88 AP EAPCET 2025 · 27 May · Shift 1 MCQ

$$\int \frac{dx}{(1+\sqrt{x})\sqrt{x-x^2}} =$$

(A) $-2\sqrt{\dfrac{1+\sqrt{x}}{1-\sqrt{x}}}+c$

(B) $-\sqrt{\dfrac{1-\sqrt{x}}{1+\sqrt{x}}}+c$

(C) $-2\sqrt{\dfrac{1-\sqrt{x}}{1+\sqrt{x}}}+c$

(D) $2\sqrt{\dfrac{1+\sqrt{x}}{1-\sqrt{x}}}+c$

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

Q89 AP EAPCET 2025 · 27 May · Shift 1 MCQ

$$\int \mathrm{Sin}^{-1}\left(\sqrt{\frac{x}{a+x}}\right)dx =$$

(A) $(a+x)\mathrm{Tan}^{-1}\sqrt{\frac{x}{a}}+ax+c$

(B) $(a+x)\mathrm{Tan}^{-1}\sqrt{\frac{x}{a}}+\sqrt{ax}+c$

(C) $(a+x)\mathrm{Tan}^{-1}\sqrt{\frac{a}{x}}-\sqrt{ax}+c$

(D) $(a+x)\mathrm{Tan}^{-1}\sqrt{\frac{x}{a}}-\sqrt{ax}+c$

Answer: (D) $(a+x)\mathrm{Tan}^{-1}\sqrt{\frac{x}{a}}-\sqrt{ax}+c$ · The council's preliminary key

Q90 AP EAPCET 2025 · 27 May · Shift 1 MCQ

If $\int \frac{x}{x\tan x+1}\,dx=\log f(x)+k$, then $f\left(\frac{\pi}{4}\right)=$

(A) $\frac{\pi}{4\sqrt{2}}$

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

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

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

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

Q91 AP EAPCET 2025 · 26 May · Shift 1 MCQ

If $\int \frac{x^4+1}{x^2+1}\,dx = Ax^3 + Bx^2 + Cx + D\,\mathrm{Tan}^{-1}x + E$, then $A+B+C+D =$

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

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

Q92 AP EAPCET 2025 · 26 May · Shift 1 MCQ

If $\int \frac{x^2-x+2}{x^2+x+2}\,dx = x - \log(f(x)) + \frac{2}{\sqrt{7}}\,\mathrm{Tan}^{-1}(g(x)) + c$, then $f(-1) + \sqrt{7}\,g(-1) =$

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

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

Q93 AP EAPCET 2025 · 26 May · Shift 1 MCQ

$$\int \sec\left(x-\frac{\pi}{3}\right)\sec\left(x+\frac{\pi}{6}\right)dx =$$

(A) $\log\left|\frac{\sec\left(x-\frac{\pi}{3}\right)}{\sec\left(x+\frac{\pi}{6}\right)}\right| + c$
(B) $\log\left|\frac{\cos\left(x-\frac{\pi}{3}\right)}{\cos\left(x+\frac{\pi}{6}\right)}\right| + c$
(C) $\log\left|\frac{\mathrm{cosec}\left(x-\frac{\pi}{3}\right)}{\mathrm{cosec}\left(x+\frac{\pi}{6}\right)}\right| + c$
(D) $\log\left|\frac{\sin\left(x-\frac{\pi}{3}\right)}{\sin\left(x+\frac{\pi}{6}\right)}\right| + c$

Answer: (B) $\log\left|\frac{\cos\left(x-\frac{\pi}{3}\right)}{\cos\left(x+\frac{\pi}{6}\right)}\right| + c$ · The council's preliminary key

Q94 AP EAPCET 2025 · 26 May · Shift 1 MCQ

If $\int \frac{a\cos x+3\sin x}{5\cos x+2\sin x}\,dx = \frac{26}{29}x - \frac{k}{29}\log|5\cos x + 2\sin x| + c$, then $|a+k| =$

EdLoop EAPCET

(A) 3
(B) 11
(C) 12
(D) 2

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

Q95 AP EAPCET 2025 · 26 May · Shift 1 MCQ

If $\int \frac{dx}{1-\sin^4 x} = A\tan x + B\,\mathrm{Tan}^{-1}(\sqrt{2}\tan x) + C$, then $A^2 - B^2 =$

(A) $\frac{1}{2}$
(B) $\frac{3}{4}$
(C) $\frac{1}{4}$
(D) $\frac{1}{8}$

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

Q96 AP EAPCET 2025 · 26 May · Shift 2 MCQ

$\int (\log 2x)^3\,dx =$

(A) $x\left[(\log 2x)^3 - 3(\log 2x)^2 + 6(\log 2x) - 6\right] + c$
(B) $\frac{x}{4}\left[4(\log 2x)^3 - 6(\log 2x)^2 + 6(\log 2x) - 3\right] + c$
(C) $\frac{x}{2}\left[(\log 2x)^3 - 3(\log 2x)^2 + 3(\log 2x) - 6\right] + c$
(D) $x\left[(\log 2x)^3 - 6(\log 2x)^2 + 18(\log 2x) - 54\right] + c$

Answer: (A) $x\left[(\log 2x)^3 - 3(\log 2x)^2 + 6(\log 2x) - 6\right] + c$ · The council's preliminary key

Q97 AP EAPCET 2025 · 26 May · Shift 2 MCQ

$$\int \frac{x+1}{(x-2)\sqrt{1-x}}\,dx =$$

(A) $\log(x+1) - \log(x-2)\sqrt{1-x} + c$
(B) $\log(x-2)\sqrt{1-x} + c$
(C) $6\,\mathrm{Tan}^{-1}\sqrt{1-x} - 2\sqrt{1-x} + c$
(D) $4\,\mathrm{Tan}^{-1}\sqrt{1-x} - 2\sqrt{1-x} + c$

Answer: (C) $6\,\mathrm{Tan}^{-1}\sqrt{1-x} - 2\sqrt{1-x} + c$ · The council's preliminary key

Q98 AP EAPCET 2025 · 26 May · Shift 2 MCQ

$\int \frac{1}{1+x+x^2}\,dx =$

(A) $\frac{2}{\sqrt{3}}\log\left(\frac{2x+1+\sqrt{3}}{2x-1-\sqrt{3}}\right)+c$

(B) $\frac{1}{\sqrt{3}}\log\left(\frac{2x+1-\sqrt{3}}{2x+1+\sqrt{3}}\right)+c$

(C) $\frac{2}{\sqrt{3}}\mathrm{Tan}^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)+c$

(D) $\frac{2}{\sqrt{5}}\mathrm{Tan}^{-1}\left(\frac{2x+1}{\sqrt{5}}\right)+c$

Answer: (C) $\frac{2}{\sqrt{3}}\mathrm{Tan}^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)+c$ · The council's preliminary key

Q99 AP EAPCET 2025 · 26 May · Shift 2 MCQ

If $\int\frac{dx}{(x\tan x+1)^2}=f(x)+c$, then $\lim_{x\to\frac{\pi}{2}}f(x)=$

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

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

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

(D) ∞

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

Q100 AP EAPCET 2025 · 26 May · Shift 2 MCQ

$\int\sin^3 x\cos^2 x\,dx=$

(A) $\frac{\sin^4 x\cos x}{5}-\frac{\sin^2 x\cos x}{15}-\frac{2\cos x}{15}+c$

(B) $-\frac{\sin^4 x\cos x}{5}-\frac{\sin^2 x\cos x}{15}+\frac{2\cos x}{15}+c$

(C) $\frac{\sin^4 x\cos x}{5}-\frac{\sin^2 x\cos x}{15}+\frac{2x}{15}+c$

(D) $\frac{\sin^4 x\cos x}{5}+\frac{\sin^2 x\cos x}{3}-\frac{2x}{15}+c$

Answer: (A) $\frac{\sin^4 x\cos x}{5}-\frac{\sin^2 x\cos x}{15}-\frac{2\cos x}{15}+c$ · The council's preliminary key

Q101 AP EAPCET 2025 · 24 May · Shift 1 MCQ

$\int(\sqrt{\tan x}+\sqrt{\cot x})\,dx=$

(A) $2\,\mathrm{Tan}^{-1}\left(\frac{\tan x-1}{\sqrt{\tan x}}\right)+c$

(B) $\mathrm{Tan}^{-1}\left(\frac{\tan x-2}{2\sqrt{\tan x}}\right)+c$

(C) $\sqrt{2}\,\mathrm{Tan}^{-1}\left(\frac{\tan x-1}{\sqrt{2\tan x}}\right)+c$

(D) $\sqrt{2}\,\mathrm{Tan}^{-1}\left(\frac{\tan x+1}{\sqrt{2\tan x}}\right)+c$

Answer: (C) $\sqrt{2}\,\mathrm{Tan}^{-1}\left(\frac{\tan x-1}{\sqrt{2\tan x}}\right)+c$ · The council's preliminary key

Q102 AP EAPCET 2025 · 24 May · Shift 1 MCQ

$\int\frac{\sqrt{x-2}}{2x+4}\,dx=$

(A) $\sqrt{x-2}-\frac{1}{2}\mathrm{Tan}^{-1}\left(\frac{\sqrt{x-2}}{2}\right)+c$

(B) $\sqrt{x-2}-2\,\mathrm{Tan}^{-1}\left(\frac{\sqrt{x-2}}{2}\right)+c$

(C) $\sqrt{x-2}+2\,\mathrm{Tan}^{-1}\left(\frac{\sqrt{x-2}}{2}\right)+c$

(D) $\sqrt{x-2}+\frac{1}{2}\mathrm{Tan}^{-1}\left(\frac{\sqrt{x-2}}{2}\right)+c$

Answer: (B) $\sqrt{x-2}-2\,\mathrm{Tan}^{-1}\left(\frac{\sqrt{x-2}}{2}\right)+c$ · The council's preliminary key

Q103 AP EAPCET 2025 · 24 May · Shift 1 MCQ

If $\int x^{49}\left[\mathrm{Tan}^{-1}x^{50}+\frac{x^{50}}{1+x^{100}}\right]dx=\frac{x^n}{k}f(x)+c$, then $f(x)-f\left(\sqrt[k]{x^n}\right)=$

(A) $k+n$

(B) $k-n$

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

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

Answer: (B) $k-n$ · The council's preliminary key

Q104 AP EAPCET 2025 · 24 May · Shift 1 MCQ

$\int\frac{x}{\sqrt{x^2-2x+5}}dx=$

(A) $\sqrt{x^2-2x+5}+\mathrm{Sinh}^{-1}\left(\frac{x-1}{2}\right)+c$

(B) $\frac{1}{2}\sqrt{x^2-2x+5}+\mathrm{Sin}^{-1}\left(\frac{x-1}{2}\right)+c$

(C) $2\sqrt{x^2-2x+5}+\mathrm{Cosh}^{-1}\left(\frac{x-1}{2}\right)+c$

(D) $\sqrt{x^2-2x+5}-\mathrm{Cos}^{-1}\left(\frac{x-1}{2}\right)+c$

Answer: (A) $\sqrt{x^2-2x+5}+\mathrm{Sinh}^{-1}\left(\frac{x-1}{2}\right)+c$ · The council's preliminary key

Q105 AP EAPCET 2025 · 24 May · Shift 1 MCQ

For $0<x<1$, $\int[\mathrm{Tan}^{-1}(1-x+x^2)+\mathrm{Tan}^{-1}(1-x)]dx=$

(A) $x\,\mathrm{Cot}^{-1}x+\log\sqrt{1+x^2}+c$

(B) $x\,\mathrm{Tan}^{-1}x-\log(1+x^2)+c$

(C) $x\,\mathrm{Cot}^{-1}x+\frac{3}{4}\log(1+x^2)+c$

(D) $x\,\mathrm{Tan}^{-1}x-\frac{3}{4}\log\sqrt{1+x^2}+c$

Answer: (A) $x\,\mathrm{Cot}^{-1}x+\log\sqrt{1+x^2}+c$ · The council's preliminary key

Q106 AP EAPCET 2025 · 23 May · Shift 1 MCQ

$\int\frac{x+1}{x^3-1}dx=$

(A) $\frac{1}{3}\log\left(\frac{x+1}{x^2+x+1}\right)+c$
(B) $\frac{1}{3}\log\left(\frac{(x-1)^2}{x^2+x+1}\right)+c$
(C) $\frac{1}{3}\log\left(\frac{x-1}{x^2+x+1}\right)+c$
(D) $\frac{1}{3}\log\left(\frac{(x+1)^2}{x^2-x+1}\right)+c$

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

Q107 AP EAPCET 2025 · 23 May · Shift 1 MCQ

$$\int \frac{x^4-16x^2+2x+8}{x^3-4x^2+2}\,dx =$$

(A) $\frac{x^2+8x+c}{2}$
(B) x^2+8x+c
(C) x^3-4x+c
(D) $\frac{x^2-8x+c}{2}$

Answer: (A) $\frac{x^2+8x+c}{2}$ · The council's preliminary key

Q108 AP EAPCET 2025 · 23 May · Shift 1 MCQ

$\int \frac{\sec^2 x}{(\sec x+\tan x)^{5/2}}\,dx =$

(A) $-\frac{(\sec x+\tan x)^{5/2}}{5}-\frac{(\sec x+\tan x)^{7/2}}{7}+c$
(B) $-\frac{(\sec x-\tan x)^{5/2}}{5}-\frac{(\sec x-\tan x)^{7/2}}{7}+c$
(C) $-\frac{(\sec x+\tan x)^{3/2}}{3}-\frac{(\sec x+\tan x)^{7/2}}{7}+c$
(D) $-\frac{(\sec x-\tan x)^{3/2}}{3}-\frac{(\sec x-\tan x)^{7/2}}{7}+c$

Answer: (D) $-\frac{(\sec x-\tan x)^{3/2}}{3}-\frac{(\sec x-\tan x)^{7/2}}{7}+c$ · The council's preliminary key

Q109 AP EAPCET 2025 · 23 May · Shift 1 MCQ

$$\int \frac{1}{\cos x}\left[\frac{1}{\sin x}-\frac{1}{\sin x+3\cos x}\right]dx =$$

(A) $\frac{1}{3}\log\left|\frac{\sin x}{\sin x+3\cos x}\right|+c$
(B) $\log\left|\frac{\cos x}{\sin x+3\cos x}\right|+c$
(C) $\frac{1}{3}\log\left|\frac{\cos x}{\sin x+3\cos x}\right|+c$
(D) $\log\left|\frac{\sin x}{\sin x+3\cos x}\right|+c$

Answer: (D) $\log\left|\frac{\sin x}{\sin x+3\cos x}\right|+c$ · The council's preliminary key

Q110 AP EAPCET 2025 · 23 May · Shift 1 MCQ

$$\int \mathrm{Cos}^{-1}\left(\frac{1-x^2}{1+x^2}\right)dx =$$

(A) $2\left[x\,\mathrm{Tan}^{-1}x-\log\sqrt{1+x^2}\right]+c$

(B) $2x\,\mathrm{Tan}^{-1}x+\log\sqrt{1+x^2}+c$

(C) $x\,\mathrm{Tan}^{-1}x+\log\sqrt{1-x^2}+c$

(D) $2\left[\mathrm{Tan}^{-1}x-\log\sqrt{1+x^2}\right]+c$

Answer: (A) $2\left[x\,\mathrm{Tan}^{-1}x-\log\sqrt{1+x^2}\right]+c$ · The council's preliminary key

Q111 AP EAPCET 2025 · 23 May · Shift 1 MCQ

$\int_0^x \frac{t^2}{\sqrt{a^2+t^2}}\,dt=$

(A) $\frac{x}{2}\sqrt{a^2+x^2}+\log\left|x+\sqrt{a^2+x^2}\right|$

(B) $\sqrt{a^2+x^2}-a^2\,\mathrm{Sinh}^{-1}\frac{x}{a}$

(C) $\frac{x}{2}\sqrt{a^2+x^2}+\frac{a^2}{4}\log\left|x+\sqrt{a^2+x^2}\right|$

(D) $\frac{x}{2}\sqrt{a^2+x^2}-\frac{a^2}{2}\mathrm{Sinh}^{-1}\frac{x}{a}$

Answer: (D) $\frac{x}{2}\sqrt{a^2+x^2}-\frac{a^2}{2}\mathrm{Sinh}^{-1}\frac{x}{a}$ · The council's preliminary key

Q112 AP EAPCET 2025 · 23 May · Shift 2 MCQ

$$\int\frac{\sec^2x}{\sin^7x}\,dx-\int\frac{7}{\sin^7x}\,dx=$$

(A) $\frac{1}{\sin^6x\cos x}+c$

(B) $\frac{\tan x}{\sin^8x}+c$

(C) $\sin^8x\cos x+c$

(D) $\sec x\tan^7x+c$

Answer: (A) $\frac{1}{\sin^6x\cos x}+c$ · The council's preliminary key

Q113 AP EAPCET 2025 · 23 May · Shift 2 MCQ

If $\int(x^6+x^4+x^2)\sqrt{2x^4+3x^2+6}\,dx=f(x)+c$, then $f(3)=$

(A) $\frac{3}{2}(95)^{3/2}$

(B) $\frac{3}{2}(195)^{3/2}$

(C) $\frac{3}{2}(265)^{3/2}$

(D) $\frac{3}{2}(175)^{3/2}$

Answer: (B) $\frac{3}{2}(195)^{3/2}$ · The council's preliminary key

Q114 AP EAPCET 2025 · 23 May · Shift 2 MCQ

$$\int\frac{dx}{(x+1)\sqrt{x^2+1}}=$$

EdLoop EAPCET

(A) $\frac{1}{\sqrt{2}}\text{Sinh}^{-1}\left(\frac{1+x}{1-x}\right)+c$

(B) $\frac{1}{\sqrt{2}}\text{Sinh}^{-1}\left(\frac{1-x}{1+x}\right)+c$

(C) $-\frac{1}{\sqrt{2}}\text{Sinh}^{-1}\left(\frac{1-x}{1+x}\right)+c$

(D) $-\frac{1}{\sqrt{2}}\text{Sinh}^{-1}\left(\frac{1+x}{1-x}\right)+c$

Answer: (C) $-\frac{1}{\sqrt{2}}\text{Sinh}^{-1}\left(\frac{1-x}{1+x}\right)+c$ · The council's preliminary key

Q115 AP EAPCET 2025 · 23 May · Shift 2 MCQ

If $\int\frac{dx}{2\cos x+3\sin x+4}=\frac{2}{\sqrt{3}}f(x)+c$, then $f\left(\frac{2\pi}{3}\right)=$

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

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

(C) $\frac{5\pi}{12}$

(D) $\frac{5\pi}{8}$

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

Q116 AP EAPCET 2025 · 23 May · Shift 2 MCQ

If $\int\frac{1}{((x+4)^3(x+1)^5)^{1/4}}dx=A\cdot\left(\frac{x+4}{x+1}\right)^n+c$, then

(A) $n.A=3$

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

(C) $A+n=1$

(D) $A=n$

Answer: (B) $n+\frac{1}{A}=-\frac{1}{2}$ · The council's preliminary key

Q117 AP EAPCET 2025 · 22 May · Shift 1 MCQ

$$\int\frac{1}{9\cos^2x-24\sin x\cos x+16\sin^2x}dx=$$

(A) $\frac{\cos x}{4(3\cos x-4\sin x)}+c$

(B) $\frac{\sin x}{4(3\cos x-4\sin x)}+c$

(C) $\frac{\cos x}{3\cos x-4\sin x}+c$

(D) $\frac{\sin x}{3\cos x-4\sin x}+c$

Answer: (A) $\frac{\cos x}{4(3\cos x-4\sin x)}+c$ · The council's preliminary key

Q118 AP EAPCET 2025 · 22 May · Shift 1 MCQ

If $\int\frac{1}{\cot\frac{x}{2}\cot\frac{x}{3}\cot\frac{x}{6}}dx=A\log\left|\cos\frac{x}{2}\right|+B\log\left|\cos\frac{x}{3}\right|+C\log\left|\cos\frac{x}{6}\right|+k$ then $A+B+C=$

EdLoop EAPCET

(A) 7
(B) 11
(C) -7
(D) 1

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

Q119 AP EAPCET 2025 · 22 May · Shift 1 MCQ

$$\int \frac{\sin x + \cos x}{\sin x - \cos x}\, dx =$$

(A) $-x + \log|\cos x - \sin x| + c$
(B) $x - \log|\cos x - \sin x| + c$
(C) $-\log|\cos x - \sin x| + c$
(D) $\log|\cos x - \sin x| + c$

Answer: (D) $\log|\cos x - \sin x| + c$ · The council's preliminary key

Q120 AP EAPCET 2025 · 22 May · Shift 1 MCQ

$\int \frac{x^4-1}{x^2\sqrt{x^4+x^2+1}}\, dx =$

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

Answer: (B) $\frac{\sqrt{x^4+x^2+1}}{x} + c$ · The council's preliminary key

Q121 AP EAPCET 2025 · 22 May · Shift 1 MCQ

$$\int \frac{(3x-2)\tan\left(\sqrt{9x^2-12x+1}\right)}{\sqrt{9x^2-12x+1}}\, dx =$$

(A) $\frac{1}{3}\sec^2\sqrt{9x^2-12x+1} + c$
(B) $\frac{1}{3}\sec^2 x + c$
(C) $\frac{1}{2}\log\left|\sec\sqrt{9x^2-12x+1}\right| + c$
(D) $\frac{1}{3}\log\left|\sec\sqrt{9x^2-12x+1}\right| + c$

Answer: (D) $\frac{1}{3}\log\left|\sec\sqrt{9x^2-12x+1}\right| + c$ · The council's preliminary key

Q122 AP EAPCET 2025 · 22 May · Shift 2 MCQ

$$\int \left(\sum_{r=0}^{\infty} \frac{x^r 2^r}{r!}\right) dx =$$

(A) $e^x + c$

(B) $\frac{-2}{1-2x} + c$

(C) $2e^{2x} + c$

(D) $\frac{e^{2x}}{2} + c$

Answer: (D) $\frac{e^{2x}}{2} + c$ · The council's preliminary key

Q123 AP EAPCET 2025 · 22 May · Shift 2 MCQ

$\int \frac{dx}{12\cos x + 5\sin x} =$

(A) $\frac{1}{13}\log\left|\tan\left(\frac{\pi}{4} + \frac{x}{2} - \frac{1}{2}\mathrm{Tan}^{-1}\frac{5}{12}\right)\right| + c$

(B) $\frac{5}{12}\log\left|\tan\left(\frac{\pi}{4} + \frac{x}{2} - \frac{1}{2}\mathrm{Tan}^{-1}\frac{5}{12}\right)\right| + c$

(C) $\frac{1}{13}\log\left|\tan\left(\frac{\pi}{4} + \frac{x}{2} + \frac{1}{2}\mathrm{Tan}^{-1}\frac{5}{12}\right)\right| + c$

(D) $\frac{5}{12}\log\left|\tan\left(\frac{\pi}{4} + \frac{x}{2} + \frac{1}{2}\mathrm{Tan}^{-1}\frac{5}{12}\right)\right| + c$

Answer: (A) $\frac{1}{13}\log\left|\tan\left(\frac{\pi}{4} + \frac{x}{2} - \frac{1}{2}\mathrm{Tan}^{-1}\frac{5}{12}\right)\right| + c$ · The council's preliminary key

Q124 AP EAPCET 2025 · 22 May · Shift 2 MCQ

If $\int \frac{\cos^3 x}{\sin^2 x + \sin^4 x}\,dx = c - \mathrm{cosec}\, x - f(x)$, then $f\left(\frac{\pi}{2}\right) =$

(A) 1

(B) 0

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

(D) π

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

Q125 AP EAPCET 2025 · 22 May · Shift 2 MCQ

$$\int \frac{13\cos 2x - 9\sin 2x}{3\cos 2x - 4\sin 2x}\,dx =$$

(A) $3x - \frac{1}{2}\log|3\cos 2x - 4\sin 2x| + c$

(B) $\frac{x}{2} - 3\log|3\cos 2x - 4\sin 2x| + c$

(C) $3x + \frac{1}{2}\log|3\cos 2x - 4\sin 2x| + c$

(D) $x + \frac{3}{2}\log|3\cos 2x - 4\sin 2x| + c$

Answer: (A) $3x - \frac{1}{2}\log|3\cos 2x - 4\sin 2x| + c$ · The council's preliminary key

Q126 AP EAPCET 2025 · 22 May · Shift 2 MCQ

$$\int \sqrt{x^2 + x + 1}\,dx$$

EdLoop EAPCET

(A) $\frac{(2x+1)}{4}\sqrt{x^2+x+1}+\frac{3}{8}\sinh^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)+c$

(B) $\frac{x+1}{4}\sqrt{x^2+x+1}+\frac{3}{8}\sinh^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)+c$

(C) $\frac{x+1}{4}\sqrt{x^2+x+1}-\frac{3}{8}\sinh^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)+c$

(D) $\frac{(2x+1)}{4}\sqrt{x^2+x+1}-\frac{3}{8}\sinh^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)+c$

Answer: (A) $\frac{(2x+1)}{4}\sqrt{x^2+x+1}+\frac{3}{8}\sinh^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)+c$ · The council's preliminary key

Q127 AP EAPCET 2025 · 21 May · Shift 1 MCQ

$$\int \frac{e^{\sin x}(\sin 2x-8\cos x)}{2(\sin x-3)^2}\,dx=$$

(A) $e^{\sin x}(\sin x-3)+c$

(B) $\frac{e^{\sin x}}{(\sin x-3)^2}+c$

(C) $e^{\sin x}(\sin x-3)^2+c$

(D) $\frac{e^{\sin x}}{\sin x-3}+c$

Answer: (D) $\frac{e^{\sin x}}{\sin x-3}+c$ · The council's preliminary key

Q128 AP EAPCET 2025 · 21 May · Shift 1 MCQ

If $\int\left(3t^2\sin\frac{1}{t}-t\cos\frac{1}{t}\right)dt=f(t)\sin\left(\frac{1}{t}\right)+c$, then $f(2)=$

(A) 2

(B) -12

(C) 8

(D) -16

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

Q129 AP EAPCET 2025 · 21 May · Shift 1 MCQ

$\int(\log x)^3x^4\,dx=$

(A) $x^5\left[\frac{1}{5}(\log x)^3-\frac{3}{25}(\log x)^2+\frac{6}{125}\log x-\frac{6}{625}\right]+c$

(B) $x^5\left[\frac{1}{5}(\log x)^3-\frac{2}{25}(\log x)^2+\frac{6}{125}\log x-\frac{12}{125}\right]+c$

(C) $x^5\left[\frac{1}{5}(\log x)^3-\frac{4}{25}(\log x)^2-\frac{9}{125}\log x-\frac{8}{125}\right]+c$

(D) $x^5\left[\frac{1}{5}(\log x)^3+\frac{3}{25}(\log x)^2-\frac{6}{125}\log x-\frac{6}{125}\right]+c$

Answer: (A) $x^5\left[\frac{1}{5}(\log x)^3-\frac{3}{25}(\log x)^2+\frac{6}{125}\log x-\frac{6}{625}\right]+c$ · The council's preliminary key

Q130 AP EAPCET 2025 · 21 May · Shift 1 MCQ

$$\int\frac{\sin 2x}{\sin^2 x+3\cos x-3}\,dx$$

EdLoop EAPCET

(A) $2\log\left|\frac{\cos x-2}{\cos x-1}\right|+c$
(B) $\log\left(\frac{(\cos x-2)^2}{(\cos x-1)^4}\right)+c$
(C) $\log\left(\frac{(\cos x-2)^2}{|\cos x-1|}\right)+c$
(D) $\log\left(\frac{(\cos x-2)^4}{(\cos x-1)^2}\right)+c$

Answer: (D) $\log\left(\frac{(\cos x-2)^4}{(\cos x-1)^2}\right)+c$ · The council's preliminary key

Q131 AP EAPCET 2025 · 21 May · Shift 1 MCQ

If $\int \frac{dx}{\sin^3 x+\cos^3 x}=A\log\left|\frac{\sqrt{2}+t}{\sqrt{2}-t}\right|+B\tan^{-1}(t)+c$, then $\left(\frac{B}{A},t\right)=$

(A) $(3\sqrt{2},\sin x-\cos x)$
(B) $(2\sqrt{2},\sin x-\cos x)$
(C) $\left(\frac{\sqrt{2}}{3},\sin x-\cos x\right)$
(D) $\left(\frac{3}{\sqrt{2}},\sin x+\cos x\right)$

Answer: (B) $(2\sqrt{2},\sin x-\cos x)$ · The council's preliminary key

Q132 AP EAPCET 2025 · 21 May · Shift 2 MCQ

If $\int e^{\sin x}(1+\sec x\tan x)\,dx=e^{\sin x}f(x)+c$, then in $0\le x\le 2\pi$, the number of solutions of $f(x)=1$ is

(A) 4
(B) 0
(C) 2
(D) 3

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

Q133 AP EAPCET 2025 · 21 May · Shift 2 MCQ

If $\int \frac{dx}{(x-1)^{3/2}(x-3)^{1/2}}=\sqrt{f(x)}+c$ then $f(-1)-f(0)=$

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

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

Q134 AP EAPCET 2025 · 21 May · Shift 2 MCQ

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

EdLoop EAPCET

(A) $\log\left|\frac{\sqrt{2-x^2}+1}{\sqrt{2-x^2}-1}\right|+c$

(B) $\frac{1}{2}\log\left|\frac{\sqrt{2-x^2}}{1-x^2}\right|+c$

(C) $\frac{1}{2}\log\left|\frac{1+\sqrt{2-x^2}}{1-\sqrt{2-x^2}}\right|+c$

(D) $\log\left|\frac{1-x^2}{\sqrt{2-x^2}}\right|+c$

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

Q135 AP EAPCET 2025 · 21 May · Shift 2 MCQ

$$\int\left(\frac{1+x+\sqrt{x+x^2}}{\sqrt{x}+\sqrt{1+x}}\right)dx=$$

(A) $\frac{1}{2}\sqrt{1+x}+c$

(B) $\frac{2}{3}(1+x)^{3/2}+c$

(C) $\sqrt{1+x}+c$

(D) $2(1+x)^{\frac{3}{2}}+c$

Answer: (B) $\frac{2}{3}(1+x)^{3/2}+c$ · The council's preliminary key

Q136 AP EAPCET 2025 · 21 May · Shift 2 MCQ

If $\int x^2\cos^2 x\,dx=\frac{1}{6}f(x)+g(x)\sin 2x+h(x)\cos 2x+c$, then $f(1)+g(2)+h\left(\frac{1}{2}\right)=$

(A) 0

(B) 2

(C) 1

(D) -1

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

Q137 TS EAPCET 2025 · 4 May · Shift 1 MCQ

If $\int x^3\sin 3x\,dx=\frac{1}{27}\left[f(x)\cos 3x+g(x)\sin 3x\right]+c$ then $f(1)+g(1)=$

(A) 14

(B) 6

(C) 4

(D) 12

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

Q138 TS EAPCET 2025 · 4 May · Shift 1 MCQ

If $I_1=\int\sin^6 x\,dx$ and $I_2=\int\cos^6 x\,dx$ then $I_1+I_2=$

EdLoop EAPCET

(A) $\frac{5x}{8}+\frac{3\cos 4x}{32}+c$
(B) $\frac{1}{32}(20x-3\sin 4x)+c$
(C) $\frac{1}{32}(20x+3\sin 4x)+c$
(D) $\frac{5x}{4}+\frac{3\sin 4x}{16}+c$

Answer: (C) $\frac{1}{32}(20x+3\sin 4x)+c$ · The council's preliminary key

Q139 TS EAPCET 2025 · 4 May · Shift 1 MCQ

$\int \frac{x+\cos x}{1-\sin x}\,dx =$

(A) $x\tan\left(\frac{\pi}{4}+\frac{x}{2}\right)+c$
(B) $x\tan\frac{x}{2}+c$
(C) $x\cot\frac{x}{2}+c$
(D) $x\cot\left(\frac{\pi}{4}+\frac{x}{2}\right)+c$

Answer: (A) $x\tan\left(\frac{\pi}{4}+\frac{x}{2}\right)+c$ · The council's preliminary key

Q140 TS EAPCET 2025 · 4 May · Shift 1 MCQ

$$\int \frac{1}{(x+2)\sqrt{x^2+x+2}}\,dx =$$

(A) $-\frac{1}{2}\sinh^{-1}\left(\frac{2-3x}{\sqrt{7}(x+2)}\right)+c$
(B) $-\frac{1}{2}\sin^{-1}\left(\frac{2+3x}{\sqrt{7}(x+2)}\right)+c$
(C) $\frac{1}{2}\cosh^{-1}\left(\frac{2+3x}{\sqrt{7}(x+2)}\right)+c$
(D) $-\frac{1}{2}\cos^{-1}\left(\frac{2-3x}{\sqrt{7}(x+2)}\right)+c$

Answer: (A) $-\frac{1}{2}\sinh^{-1}\left(\frac{2-3x}{\sqrt{7}(x+2)}\right)+c$ · The council's preliminary key

Q141 TS EAPCET 2025 · 4 May · Shift 2 MCQ

If $I_1=\int \frac{e^x}{e^{4x}+e^{2x}+1}dx$, $I_2=\int \frac{e^{-x}}{e^{-4x}+e^{-2x}+1}dx$, then $I_2-I_1=$

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

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

Q142 TS EAPCET 2025 · 4 May · Shift 2 MCQ

If $\int \frac{1}{x}\sqrt{\frac{1-\sqrt{x}}{1+\sqrt{x}}}\,dx=2f(x)-2\sin^{-1}\sqrt{x}+c$, then $f(x)=$

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

Answer: (A) $-\text{Sech}^{-1}\sqrt{x}$ · The council's preliminary key

Q143 TS EAPCET 2025 · 4 May · Shift 2 MCQ

$$\int \frac{3x+2}{4x^2+4x+5}\,dx = A\log\left(4x^2+4x+5\right) + B\,\text{Tan}^{-1}\left(\frac{2x+1}{2}\right) + c$$

then $A+B=$

(A) $\frac{1}{2}$
(B) $\frac{3}{4}$
(C) $\frac{3}{8}$
(D) $\frac{1}{8}$

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

Q144 TS EAPCET 2025 · 3 May · Shift 1 MCQ

$\int e^{-x}(x^3-2x^2+3x-4)\,dx =$

(A) $-e^{-x}(x^3-x^2+5x-1)+c$
(B) $e^{-x}(x^3-x^2+5x-1)+c$
(C) $e^{-x}(x^3+x^2+5x+1)+c$
(D) $-e^{-x}(x^3+x^2+5x+1)+c$

Answer: (D) $-e^{-x}(x^3+x^2+5x+1)+c$ · The council's preliminary key

Q145 TS EAPCET 2025 · 3 May · Shift 1 MCQ

$\int(1+\tan^2 x)(1+2x\tan x)\,dx =$

(A) $x\sec x + c$
(B) $x\tan^2 x + c$
(C) $x\sec^2 x + c$
(D) $x\tan x + c$

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

Q146 TS EAPCET 2025 · 3 May · Shift 1 MCQ

$\int \frac{x^2\,\text{Tan}^{-1}x}{(1+x^2)^2}\,dx =$

(A) $\frac{(\mathrm{Tan}^{-1}x)^2}{4}-\frac{x\,\mathrm{Tan}^{-1}x}{2(1+x^2)}+\frac{1-x^2}{4(1+x^2)}+\mathrm{c}$

(B) $\frac{(\mathrm{Tan}^{-1}x)^2}{4}-\frac{4x\,\mathrm{Tan}^{-1}x+1-x^2}{8(1+x^2)}+\mathrm{c}$

(C) $\frac{(\mathrm{Tan}^{-1}x)^2}{4}-\frac{x\,\mathrm{Tan}^{-1}x}{(1+x^2)}-\frac{1-x^2}{4(1+x^2)}+\mathrm{c}$

(D) $\frac{(\tan x)^2}{4}+\frac{4x\,\mathrm{Tan}^{-1}x-1+x^2}{4(1+x^2)}+\mathrm{c}$

Answer: (B) $\frac{(\mathrm{Tan}^{-1}x)^2}{4}-\frac{4x\,\mathrm{Tan}^{-1}x+1-x^2}{8(1+x^2)}+\mathrm{c}$ · The council's preliminary key

Q147 TS EAPCET 2025 · 3 May · Shift 1 MCQ

$\int\frac{\log x}{(1+x)^3}dx=$

(A) $\frac{1}{2}\left[\frac{1}{1+x}+\frac{\log x}{(1+x)^2}-\log(x^2+x)\right]+c$

(B) $\frac{1}{2}\left[\frac{1}{1+x}-\frac{\log x}{(1+x)}-\log(1+x^2)\right]+c$

(C) $\frac{1}{2}\left[\frac{1}{1+x}+\frac{\log x}{(1+x)^2}-\log(1+x^2)\right]+c$

(D) $\frac{1}{2}\left[\frac{1}{1+x}-\frac{\log x}{(1+x)^2}+\log\left(\frac{x}{1+x}\right)\right]+c$

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

Q148 TS EAPCET 2025 · 3 May · Shift 2 MCQ

$$\int\frac{3^x(x\log 3-1)}{x^2}dx=$$

(A) $x.3^x+c$

(B) $\frac{3^x}{x^2}+c$

(C) $x^2 3^x+c$

(D) $\frac{3^x}{x}+c$

Answer: (D) $\frac{3^x}{x}+c$ · The council's preliminary key

Q149 TS EAPCET 2025 · 3 May · Shift 2 MCQ

If $\frac{5\pi}{4}<x<\frac{7\pi}{4}$, then $\int\sqrt{\frac{1-\sin 2x}{1+\sin 2x}}\,dx=$

(A) $-\sec^2\left(\frac{\pi}{4}-x\right)+c$

(B) $-\log\left|\sec\left(\frac{\pi}{4}-x\right)\right|+c$

(C) $\sec^2\left(\frac{\pi}{4}-x\right)+c$

(D) $\log\left|\sec\left(\frac{\pi}{4}-x\right)\right|+c$

Answer: (D) $\log\left|\sec\left(\frac{\pi}{4}-x\right)\right|+c$ · The council's preliminary key

Q150 TS EAPCET 2025 · 3 May · Shift 2 MCQ

$\int x\,\mathrm{Tan}^{-1}\sqrt{\frac{1+x^2}{1-x^2}}\,dx=$

(A) $\frac{x^2}{4}\left(\pi - \text{Cos}^{-1}x^2\right) + \frac{1}{4}\sqrt{1-x^2} + c$

(B) $\frac{x^2}{4}\left(\pi - \text{Cos}^{-1}x^2\right) + \frac{1}{4}\sqrt{1-x^4} + c$

(C) $\frac{x^2}{4}\left(\pi + \text{Cos}^{-1}x^2\right) - \frac{1}{4}\sqrt{1-x^4} + c$

(D) $\frac{x^2}{4}\left(\pi + \text{Cos}^{-1}x^2\right) - \frac{1}{4}\sqrt{1-x^2} + c$

Answer: (B) $\frac{x^2}{4}\left(\pi - \text{Cos}^{-1}x^2\right) + \frac{1}{4}\sqrt{1-x^4} + c$ · The council's preliminary key

Q151 TS EAPCET 2025 · 3 May · Shift 2 MCQ

$\int \frac{1}{(2\cos x + \sin x)^2} dx =$

(A) $\frac{1}{2+\tan x} + c$

(B) $-\frac{1}{2\tan x + 1} + c$

(C) $\frac{\cos x}{\cos x + 2\sin x} + c$

(D) $-\frac{\cos x}{2\cos x + \sin x} + c$

Answer: (D) $-\frac{\cos x}{2\cos x + \sin x} + c$ · The council's preliminary key

Q152 TS EAPCET 2025 · 2 May · Shift 1 MCQ

$$\int \frac{2\sin x - 3\cos x}{4\cos x - 3\sin x} dx =$$

(A) $\frac{1}{25}\left[17\log|4\cos x - 3\sin x| - 6x\right] + c$

(B) $\frac{1}{25}\left[x - 18\log|4\cos x - 3\sin x|\right] + c$

(C) $\frac{1}{25}\left[\log|4\cos x - 3\sin x| - 18x\right] + c$

(D) $\frac{1}{25}\left[17x - 6\log|4\cos x - 3\sin x|\right] + c$

Answer: (C) $\frac{1}{25}\left[\log|4\cos x - 3\sin x| - 18x\right] + c$ · The council's preliminary key

Q153 TS EAPCET 2025 · 2 May · Shift 1 MCQ

$\int e^{4x}(\sin 3x - \cos 3x)\, dx =$

(A) $\frac{e^{4x}}{25}(7\sin 3x - \cos 3x) + c$

(B) $\frac{e^{4x}}{25}(\sin 3x - 7\cos 3x) + c$

(C) $\frac{e^{4x}}{5}(7\sin 3x + \cos 3x) + c$

(D) $\frac{e^{4x}}{5}(\sin 3x + 7\cos 3x) + c$

Answer: (B) $\frac{e^{4x}}{25}(\sin 3x - 7\cos 3x) + c$ · The council's preliminary key

Q154 TS EAPCET 2025 · 2 May · Shift 1 MCQ

$$\int \left(\frac{1 - \log x}{1 + (\log x)^2}\right)^2 dx =$$

EdLoop EAPCET

(A) $\frac{1}{1+(\log x)^2}+c$

(B) $\frac{\log x}{1+(\log x)^2}+c$

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

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

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

Q155 TS EAPCET 2025 · 2 May · Shift 1 MCQ

If $\int(x+2)\sqrt{x^2-x+2}\,dx=\frac{1}{3}f(x)+\frac{5}{8}g(x)+\frac{35}{16}h(x)+c$ then $f(-1)+g(-1)+h\left(\frac{1}{2}\right)=$

(A) -4

(B) 2

(C) 4

(D) -2

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

Q156 TS EAPCET 2025 · 2 May · Shift 1 MCQ

$$\int_0^2\sqrt{(x+3)(2-x)}\,dx=$$

(A) $\frac{25}{8}\mathrm{Cos}^{-1}\left(\frac{1}{5}\right)-\frac{\sqrt{6}}{4}$

(B) $\frac{25}{8}\mathrm{Sin}^{-1}\left(\frac{1}{5}\right)-\frac{\sqrt{6}}{4}$

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

(D) π

Answer: (A) $\frac{25}{8}\mathrm{Cos}^{-1}\left(\frac{1}{5}\right)-\frac{\sqrt{6}}{4}$ · The council's preliminary key

Q157 TS EAPCET 2025 · 2 May · Shift 1 MCQ

$\int_0^{\pi/4}x^2\sin 2x\,dx=$

(A) $\frac{\pi^2-2}{8}$

(B) $\frac{\pi(\pi-2)}{8}$

(C) $\frac{\pi-2}{8}$

(D) $\frac{\pi+2}{8}$

Answer: (C) $\frac{\pi-2}{8}$ · The council's preliminary key

Q158 TS EAPCET 2025 · 2 May · Shift 2 MCQ

$$\int\left(\frac{1}{x^2}+\frac{\sin^3x+\cos^3x}{\sin^2x\cos^2x}\right)dx=$$

EdLoop EAPCET

(A) $\frac{(\sin x-\cos x)x-\sin x\cos x}{x\sin x\cos x}+c$

(B) $-\frac{1}{x}+\frac{\sin x+\cos x}{\cos x-\sin x}+c$

(C) $-\frac{1}{x}+\frac{\sin x-\cos x}{\sin^2 x\cos^2 x}+c$

(D) $\frac{(\sin x-\cos x)x-\sin x-\cos x}{x(\sin x+\cos x)}+c$

Answer: (A) $\frac{(\sin x-\cos x)x-\sin x\cos x}{x\sin x\cos x}+c$ · The council's preliminary key

Q159 TS EAPCET 2025 · 2 May · Shift 2 MCQ

If $I_n=\int\frac{1}{(x^2+1)^n}dx$, then $2nI_{n+1}-(2n-1)I_n=$

(A) $\frac{(x^2+1)^n}{x}+c$

(B) $\frac{x}{(x^2+1)^n}+c$

(C) $x\left(x^2+1\right)^{n-1}+c$

(D) $\frac{x}{(x^2+1)^{n-1}}+c$

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

Q160 TS EAPCET 2025 · 2 May · Shift 2 MCQ

$\int\frac{x^3}{x^4+3x^2+2}dx=$

(A) $\log\left(\frac{x^2+2}{\sqrt{x^2+1}}\right)+c$

(B) $\log\left(x^2+2\right)-2\log\left(x^2+1\right)+c$

(C) $\log\left(\frac{(x^2+2)x}{\sqrt{x^2+1}}\right)+c$

(D) $\log\left(\frac{x^2+1}{\sqrt{x^2+2}}\right)+c$

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

Q161 TS EAPCET 2025 · 2 May · Shift 2 MCQ

If $\int\frac{dx}{(x^2+9)\sqrt{x^2+16}}=\frac{1}{3\sqrt{7}}\mathrm{Tan}^{-1}\left(K\frac{x}{\sqrt{16+x^2}}\right)+c$, then $K=$

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

(B) $3\sqrt{7}$

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

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

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

Q162 AP EAPCET 2024 · 23 May · Shift 1 MCQ

If $\int\frac{\sqrt[4]{x}}{\sqrt{x}+\sqrt[4]{x}}dx=\frac{2}{3}\left[A\sqrt[4]{x^3}+B\sqrt[4]{x^2}+C\sqrt[4]{x}+D\log\left(1+\sqrt[4]{x}\right)\right]+K$ then $\frac{2}{3}(A+B+C+D)=$

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

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

Q163 AP EAPCET 2024 · 23 May · Shift 1 MCQ

$\int (\log x)^m x^n \, dx =$

(A) $\int t^m e^{nt} \, dt, \; t = e^x$
(B) $\int t^m e^{(n+1)t} \, dt, \; t = e^x$
(C) $\int t^m e^{(n+1)t} \, dt, \; x = e^t$
(D) $\int t^m e^{nt} \, dt, \; x = e^t$

Answer: (C) $\int t^m e^{(n+1)t} \, dt, \; x = e^t$ · The council's preliminary key

Q164 AP EAPCET 2024 · 23 May · Shift 1 MCQ

$\int \sin^{-1}\left(\sqrt{\frac{x-a}{x}}\right) dx =$

(A) $x\cos^{-1}\sqrt{\frac{a}{x}} - \sqrt{ax - a^2} + c$
(B) $x\sec^{-1}\sqrt{\frac{a}{x}} + \sqrt{x^2 - ax} + c$
(C) $x\sin^{-1}\sqrt{\frac{x}{a}} + \sqrt{x^2 + ax} + c$
(D) $\frac{x}{a}\sin^{-1}\frac{x}{a} + \frac{x^2}{a}\sqrt{1 + a^2} + c$

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

Q165 AP EAPCET 2024 · 23 May · Shift 1 MCQ

If $\int \frac{\sin x \cos x}{\sqrt{\cos^4 x - \sin^4 x}} \, dx = -\frac{f(x)}{2} + c$, then domain of $f(x)$ is

(A) $[2n\pi, (2n+1)\pi]$, n = 0, 1, 2...
(B) $\left[(4n-1)\frac{\pi}{2}, (4n+1)\frac{\pi}{2}\right]$, n = 0, 1, 2, ...
(C) $\left[(4n-1)\frac{\pi}{4}, (4n+1)\frac{\pi}{4}\right]$, n = 0, 1, 2, ...
(D) $\left[(2n)\frac{\pi}{4}, (2n+1)\frac{\pi}{4}\right]$, n = 0, 1, 2, ...

Answer: (C) $\left[(4n-1)\frac{\pi}{4}, (4n+1)\frac{\pi}{4}\right]$, n = 0, 1, 2, ... · The council's preliminary key

Q166 AP EAPCET 2024 · 22 May · Shift 1 MCQ

$$\int \frac{x^2 - 1}{x^3\sqrt{2x^4 - 2x^2 + 1}} \, dx$$

(A) $\frac{1+2x^2+2x^4}{2x^2}+c$
(B) $\frac{(1+2x^2+2x^4)^{1/2}}{2x^2}+c$
(C) $\frac{1-2x^2+2x^4}{2x^2}+c$
(D) $\frac{(1-2x^2+2x^4)^{1/2}}{2x^2}+c$

Answer: (D) $\frac{(1-2x^2+2x^4)^{1/2}}{2x^2}+c$ · The council's preliminary key

Q167 AP EAPCET 2024 · 22 May · Shift 1 MCQ

$$\int \frac{x^3 \tan^{-1} x^4}{1+x^8}\,dx =$$

(A) $\frac{(Tan^{-1}(x^4))^2}{8}+c$
(B) $\frac{(Tan^{-1}(x^4))^3}{3}+c$
(C) $\frac{(Tan^{-1}(x^4))^2}{4}+c$
(D) $\frac{(Tan^{-1}(x^4))^2}{2}+c$

Answer: (A) $\frac{(Tan^{-1}(x^4))^2}{8}+c$ · The council's preliminary key

Q168 AP EAPCET 2024 · 22 May · Shift 1 MCQ

$\int \frac{2}{1+x+x^2}\,dx =$

(A) $\frac{4}{\sqrt{3}}Tan^{-1}\left(\frac{2x-1}{\sqrt{3}}\right)+c$
(B) $\frac{4}{\sqrt{3}}Tan^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)+c$
(C) $\frac{2}{\sqrt{3}}Tan^{-1}\left(\frac{2x-1}{\sqrt{3}}\right)+c$
(D) $\frac{2}{\sqrt{3}}Tan^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)+c$

Answer: (B) $\frac{4}{\sqrt{3}}Tan^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)+c$ · The council's preliminary key

Q169 AP EAPCET 2024 · 22 May · Shift 1 MCQ

$$\int \frac{1}{x^2\left(\sqrt{1+x^2}\right)}\,dx =$$

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

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

Q170 AP EAPCET 2024 · 22 May · Shift 1 MCQ

$$\int \frac{\sin 7x}{\sin 2x \sin 5x}\,dx =$$

EdLoop EAPCET

(A) $\log(\sin 5x \sin 2x) + c$

(B) $\log \sin 5x + \log \sin 2x + c$

(C) $\frac{1}{5}\log \sin 5x + \frac{1}{2}\log \sin 2x + c$

(D) $\frac{1}{5}\log \sin x + \frac{1}{2}\log \sin x + c$

Answer: (C) $\frac{1}{5}\log \sin 5x + \frac{1}{2}\log \sin 2x + c$ · The council's preliminary key

Q171 AP EAPCET 2024 · 22 May · Shift 2 MCQ

$$\int e^{4x^2+8x-4}(x+1)\cos(3x^2+6x-4)\,dx =$$

(A) $\frac{e^{4x^2+8x-4}}{25}\left[3\sin(3x^2+6x-4) - 4\cos(3x^2+6x-4)\right] + c$

(B) $\frac{e^{4x^2+8x-4}}{50}\left[4\cos(3x^2+6x-4) + 3\sin(3x^2+6x-4)\right] + c$

(C) $\frac{e^{4x^2+8x-4}}{25}\left[3\cos(3x^2+6x-4) + 4\sin(3x^2+6x-4)\right] + c$

(D) $\frac{e^{4x^2+8x-4}}{50}\left[4\sin(3x^2+6x-4) - 3\cos(3x^2+6x-4)\right] + c$

Answer: (B) $\frac{e^{4x^2+8x-4}}{50}\left[4\cos(3x^2+6x-4) + 3\sin(3x^2+6x-4)\right] + c$ · The council's preliminary key

Q172 AP EAPCET 2024 · 22 May · Shift 2 MCQ

$$\int \left[(\log 2x)^2 + 2\log 2x\right] dx =$$

(A) $(\log 2x)^2 + c$

(B) $2x \log 2x + c$

(C) $x(\log 2x)^2 + c$

(D) $2x(\log x)^2 + c$

Answer: (C) $x(\log 2x)^2 + c$ · The council's preliminary key

Q173 AP EAPCET 2024 · 22 May · Shift 2 MCQ

If $\int \log(6\sin^2 x + 17\sin x + 12)^{\cos x}\,dx = f(x) + c$ then, $f\left(\frac{\pi}{2}\right) =$

(A) $\frac{1}{6}[\log 5^5 + \log 7^7 - 12]$

(B) $\frac{1}{6}[7\log 5 + 5\log 7 + 29]$

(C) $\frac{1}{6}[14\log 5 + 15\log 7 + 12]$

(D) $\frac{1}{6}[15\log 5 + 14\log 7 - 29]$

Answer: (D) $\frac{1}{6}[15\log 5 + 14\log 7 - 29]$ · The council's preliminary key

Q174 AP EAPCET 2024 · 22 May · Shift 2 MCQ

$$\int \frac{1}{(1+x^2)\sqrt{x^2+2}}\,dx =$$

(A) $-\text{Tan}^{-1}\frac{\sqrt{x^2+2}}{|x|}+c$

(B) $-\text{Tan}^{-1}\sqrt{x^2+2}+c$

(C) $\text{Tan}^{-1}\sqrt{\frac{x^2+1}{x^2+2}}+c$

(D) $-\text{Tan}^{-1}\sqrt{\frac{x^2+2}{x^2+1}}+c$

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

Q175 AP EAPCET 2024 · 22 May · Shift 2 MCQ

$\int \sin^4 x \cos^4 x\, dx =$

(A) $\frac{1}{128}(-2\sin^3 x\cos x - 3\sin x\cos x + 3)+c$

(B) $\frac{1}{256}(-2\sin^3 2x\cos 2x - 3\sin 2x\cos 2x + 6x)+c$

(C) $\frac{1}{128}(2\sin^3 x\cos x - 3\sin x\cos x + 3x)+c$

(D) $\frac{1}{256}(3\sin^3 x\cos x - 2\sin x\cos x + 2)+c$

Answer: (B) $\frac{1}{256}(-2\sin^3 2x\cos 2x - 3\sin 2x\cos 2x + 6x)+c$ · The council's preliminary key

Q176 AP EAPCET 2024 · 21 May · Shift 1 MCQ

If $x \notin \left[2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right]$ and $n \in \mathbb{Z}$, then $\int \sqrt{1+\sin 2x}\, dx =$

(A) $-\cos x + \sin x + c$

(B) $\cos x + \sin x + c$

(C) $-\cos x - \sin x + c$

(D) $\cos x - \sin x + c$

Answer: (D) $\cos x - \sin x + c$ · Checked by our team

Q177 AP EAPCET 2024 · 21 May · Shift 1 MCQ

$$\int e^x \left(\frac{x+2}{x+4}\right)^2 dx =$$

(A) $-\frac{xe^x}{(x+4)^2}+c$

(B) $-\frac{xe^x}{(x+4)}+c$

(C) $\frac{xe^x}{(x+4)}+c$

(D) $\frac{2xe^x}{(x+4)}+c$

Answer: (C) $\frac{xe^x}{(x+4)}+c$ · The council's preliminary key

Q178 AP EAPCET 2024 · 21 May · Shift 1 MCQ

If $\int \frac{1}{1-\cos x}dx = \tan\left(\frac{x}{\alpha}+\beta\right)+c$, then one of the values of $\frac{\pi\alpha}{4}-\beta$ is

(A) $-\frac{\pi}{2}$
(B) π
(C) 0
(D) $\frac{\pi}{4}$

Options (2) or (3) were accepted. More than one answer was accepted. · The council's preliminary key

Q179 AP EAPCET 2024 · 21 May · Shift 1 MCQ

If $729\int_1^3 \frac{1}{x^3(x^2+9)^2}\,dx = a + \log b$, then $a - b =$

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

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

Q180 AP EAPCET 2024 · 21 May · Shift 1 MCQ

If $n \geq 2$ is a natural number and $0 < \theta < \frac{\pi}{2}$, then

$$\int \frac{(\cos^n\theta - \cos\theta)^{1/n}}{\cos^{n+1}\theta}\sin\theta\,d\theta =$$

(A) $\frac{n}{n-1}(\cos^{(1-n)}\theta - 1)^2 + c$
(B) $\frac{n}{(n+1)(1-n)}(\cos^{(1-n)}\theta - 1)^{1+\frac{1}{n}} + c$
(C) $\frac{1}{n-1}(\cos^{(n-1)}\theta - 1)^2 + c$
(D) $\frac{n}{1-n^2}(1 - \cos^{(1-n)}\theta)^{(n+1)/n}$

Answer: (D) $\frac{n}{1-n^2}(1 - \cos^{(1-n)}\theta)^{(n+1)/n}$ · The council's preliminary key

Q181 AP EAPCET 2024 · 21 May · Shift 2 MCQ

$\int \frac{\sin^6 x}{\cos^8 x}\,dx =$

(A) $\tan 7x + c$
(B) $\frac{\tan^7 x}{7} + c$
(C) $\frac{\tan 7x}{7} + c$
(D) $\sec^7 x$

Answer: (B) $\frac{\tan^7 x}{7} + c$ · The council's preliminary key

Q182 AP EAPCET 2024 · 21 May · Shift 2 MCQ

$\int \frac{x^5}{x^2+1}\,dx =$

EdLoop EAPCET

(A) $\frac{x^4}{4}+\frac{x^3}{3}-\mathrm{Tan}^{-1}x+c$
(B) $\frac{x^4}{4}-\frac{x^2}{2}+\frac{1}{2}\log(x^2+1)+c$
(C) $\frac{x^4}{4}+\frac{x^3}{3}+\mathrm{Tan}^{-1}x+c$
(D) $\frac{x^4}{4}+\frac{x^2}{2}-\frac{1}{2}\log(x^2+1)+c$

Answer: (B) $\frac{x^4}{4}-\frac{x^2}{2}+\frac{1}{2}\log(x^2+1)+c$ · The council's preliminary key

Q183 AP EAPCET 2024 · 21 May · Shift 2 MCQ

$$\int\left(\sum_{r=0}^{\infty}\frac{x^r 3^r}{\lfloor r}\right)dx=$$

(A) e^x+c
(B) $\frac{e^{3x}}{3}+c$
(C) $3e^{3x}+c$
(D) $3e^x+c$

Answer: (B) $\frac{e^{3x}}{3}+c$ · The council's preliminary key

Q184 AP EAPCET 2024 · 21 May · Shift 2 MCQ

$$\int\frac{x^4+1}{x^6+1}dx=$$

(A) $\mathrm{Tan}^{-1}x-\mathrm{Tan}^{-1}x^3+c$
(B) $\mathrm{Tan}^{-1}x-\frac{1}{3}\mathrm{Tan}^{-1}x^3+c$
(C) $\mathrm{Tan}^{-1}x+\mathrm{Tan}^{-1}x^3+c$
(D) $\mathrm{Tan}^{-1}x+\frac{1}{3}\mathrm{Tan}^{-1}x^3+c$

Answer: (D) $\mathrm{Tan}^{-1}x+\frac{1}{3}\mathrm{Tan}^{-1}x^3+c$ · The council's preliminary key

Q185 AP EAPCET 2024 · 21 May · Shift 2 MCQ

$\int e^x(x+1)^2dx=$

(A) xe^x+c
(B) $e^x x^2+c$
(C) $e^x(x^2+1)+c$
(D) $e^x(x+1)+c$

Answer: (C) $e^x(x^2+1)+c$ · The council's preliminary key

Q186 AP EAPCET 2024 · 20 May · Shift 1 MCQ

$\int\frac{2x^2-3}{(x^2-4)(x^2+1)}dx=A\,\mathrm{Tan}^{-1}x+B\log(x-2)+C\log(x+2)$ then $6A+7B-5C=$

EdLoop EAPCET

(A) 9
(B) 10
(C) 6
(D) 8

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

Q187 AP EAPCET 2024 · 20 May · Shift 1 MCQ

$$\int \frac{3x^9 + 7x^8}{(x^2 + 2x + 5x^8)^2}\, dx =$$

(A) $\frac{x^7}{5x^7+x+2} + c$
(B) $\frac{x^7}{2(5x^7+x+2)} + c$
(C) $\frac{1}{2(5x^7+x+2)} + c$
(D) $\frac{-x^7}{2(5x^7+x+2)} + c$

Answer: (B) $\frac{x^7}{2(5x^7+x+2)} + c$ · The council's preliminary key

Q188 AP EAPCET 2024 · 20 May · Shift 1 MCQ

$$\int \frac{\cos x + x \sin x}{x(x + \cos x)}\, dx =$$

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

Answer: (B) $\log\left|\frac{x}{x+\cos x}\right| + c$ · The council's preliminary key

Q189 AP EAPCET 2024 · 20 May · Shift 1 MCQ

If $\int \sqrt{\frac{2}{1+\sin x}}\, dx = 2\log|A(x) - B(x)| + C$ and $0 \le x \le \frac{\pi}{2}$ then $B(\pi/4) =$

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

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

EdLoop EAPCET

Q190 AP EAPCET 2024 · 20 May · Shift 1 MCQ

If $\int \frac{3}{2\cos^3 x\sqrt{2\sin 2x}}\,dx = \frac{3}{2}(\tan x)^B + \frac{3}{10}(\tan x)^A + c$ then $A =$

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

(B) 1

(C) 5

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

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

Q191 AP EAPCET 2024 · 20 May · Shift 2 MCQ

$\int \frac{dx}{x(x^4+1)} =$

(A) $\log\left(\frac{x}{x^4+1}\right) + c$

(B) $\frac{3}{4}\log(x^4+1) + c$

(C) $\frac{1}{3}\log\left(\frac{x^3}{x^4+1}\right) + c$

(D) $\frac{1}{4}\log\left(\frac{x^4}{x^4+1}\right) + c$

Answer: (D) $\frac{1}{4}\log\left(\frac{x^4}{x^4+1}\right) + c$ · The council's preliminary key

Q192 AP EAPCET 2024 · 20 May · Shift 2 MCQ

$$\int \frac{dx}{\sqrt{\sin^3 x\cos(x-\alpha)}} =$$

(A) $\frac{1}{\cos\alpha}\sqrt{\cot x + \tan\alpha} + c$

(B) $\frac{1}{\sqrt{\cos\alpha}}\sqrt{\cot x - \tan\alpha} + c$

(C) $\frac{-1}{\sqrt{\sin\alpha}}\sqrt{\cot x + \tan\alpha} + c$

(D) $\frac{-2}{\sqrt{\cos\alpha}}\sqrt{\cot x + \tan\alpha} + c$

Answer: (D) $\frac{-2}{\sqrt{\cos\alpha}}\sqrt{\cot x + \tan\alpha} + c$ · The council's preliminary key

Q193 AP EAPCET 2024 · 20 May · Shift 2 MCQ

$\int \frac{e^{2x}}{\sqrt[4]{e^x+1}}\,dx =$

(A) $\frac{4}{7}(e^x+1)^{4/3}(3e^x-1) + c$

(B) $\frac{2}{21}(e^x+1)^{3/4}(3e^x-7) + c$

(C) $\frac{4}{21}(e^x+1)^{3/4}(3e^x-4) + c$

(D) $\frac{8}{21}(e^x+1)^{3/4}(3e^x-1) + c$

Answer: (C) $\frac{4}{21}(e^x+1)^{3/4}(3e^x-4) + c$ · The council's preliminary key

EDLOOP EAPCET

Q194 AP EAPCET 2024 · 20 May · Shift 2 MCQ

$$\int \frac{2-\sin x}{2\cos x+3}\,dx =$$

(A) $\frac{2}{\sqrt{5}}\text{Tan}^{-1}\left(\frac{1}{\sqrt{3}}\tan\frac{x}{2}\right)-\log\sqrt{2\cos x+3}+c$

(B) $\frac{4}{\sqrt{5}}\text{Tan}^{-1}\left(\frac{1}{\sqrt{5}}\tan\frac{x}{2}\right)+\log\sqrt{2\cos x+3}+c$

(C) $\frac{3}{\sqrt{5}}\text{Tan}^{-1}\left(\frac{1}{\sqrt{5}}\tan\frac{x}{2}\right)+\log\sqrt{2\cos x-3}+c$

(D) $\frac{1}{\sqrt{5}}\text{Tan}^{-1}\left(\frac{1}{\sqrt{5}}\tan\frac{x}{3}\right)-\log\sqrt{2\cos x-3}+c$

Answer: (B) $\frac{4}{\sqrt{5}}\text{Tan}^{-1}\left(\frac{1}{\sqrt{5}}\tan\frac{x}{2}\right)+\log\sqrt{2\cos x+3}+c$ · The council's preliminary key

Q195 AP EAPCET 2024 · 20 May · Shift 2 MCQ

$$\int \sin^{-1}\sqrt{\frac{x}{a+x}}\,dx =$$

(A) $(a+x)\,Tan^{-1}\sqrt{\frac{x}{a}}-\sqrt{ax}+c$

(B) $\frac{1}{a+x}\,Tan^{-1}\left(\frac{x}{a}\right)-\sqrt{ax}+c$

(C) $(a+x)\,Tan^{-1}\left(\frac{a}{x}\right)+\sqrt{ax}+c$

(D) $\sqrt{a+x}\,Tan^{-1}\left(\frac{x}{a}\right)+ax+c$

Answer: (A) $(a+x)\,Tan^{-1}\sqrt{\frac{x}{a}}-\sqrt{ax}+c$ · The council's preliminary key

Q196 AP EAPCET 2024 · 19 May · Shift 2 MCQ

$$\int \frac{2x^2\cos(x^2)-\sin(x^2)}{x^2}\,dx =$$

(A) $\frac{\sin(x^2)}{x^2}+c$

(B) $\frac{\cos(x^2)}{x^2}+c$

(C) $\sin(x^2)+c$

(D) $\frac{\sin(x^2)}{x}+c$

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

Q197 AP EAPCET 2024 · 19 May · Shift 2 MCQ

If $\int\frac{\log(1+x^4)}{x^3}dx=f(x)\log\left(\frac{1}{g(x)}\right)+\tan^{-1}(h(x))+c$, then $h(x)\left[f(x)+f\left(\frac{1}{x}\right)\right]=$

(A) $h(x)g(-x)$

(B) $\frac{g(x)}{2}$

(C) $g(x)+g(-x)$

(D) $g(x)h(x)$

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

Q198 AP EAPCET 2024 · 19 May · Shift 2 MCQ

Let $f(x)=\int \frac{x}{(x^2+1)(x^2+3)}dx$. If $f(3)=\frac{1}{4}\log\left(\frac{5}{6}\right)$ then $f(0)=$

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

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

Q199 AP EAPCET 2024 · 19 May · Shift 2 MCQ

$$\int \frac{2\cos 2x}{(1+\sin 2x)(1+\cos 2x)}dx=$$

(A) $2\tan x+\log(1+\tan x)+c$
(B) $\tan x-2\log(1+\tan x)+c$
(C) $2\log(1+\tan x)+\tan x+c$
(D) $2\log(1+\tan x)-\tan x+c$

Answer: (D) $2\log(1+\tan x)-\tan x+c$ · The council's preliminary key

Q200 AP EAPCET 2024 · 19 May · Shift 2 MCQ

$$\int \left(\frac{x}{x\cos x-\sin x}\right)^2 dx=$$

(A) $\frac{x\,\mathrm{cosec}\,x}{x\cos x-\sin x}+\cot x+c$
(B) $\frac{x\,\mathrm{cosec}\,x}{x\cos x-\sin x}-\cot x+c$
(C) $\frac{x\,\mathrm{cosec}\,x}{x\cos x+\sin x}+\cot x+c$
(D) $\frac{x}{x\cos x-\sin x}-\cot x+c$

Answer: (B) $\frac{x\,\mathrm{cosec}\,x}{x\cos x-\sin x}-\cot x+c$ · The council's preliminary key

Q201 AP EAPCET 2024 · 18 May · Shift 1 MCQ

$$\int \frac{1}{x^5\sqrt[5]{x^5+1}}dx=$$

(A) $\frac{4}{\sqrt[5]{x^5+1}}+c$
(B) $4x^4(x^5+1)^{4/5}+c$
(C) $-\frac{(x^5+1)^{4/5}}{4x^4}+c$
(D) $-\frac{(x^5+1)^{4/5}}{4x^5}+c$

Answer: (C) $-\frac{(x^5+1)^{4/5}}{4x^4}+c$ · The council's preliminary key

EdLoop EAPCET

Q202 AP EAPCET 2024 · 18 May · Shift 1 MCQ

$$\int \frac{x+1}{\sqrt{x^2+x+1}}\,dx =$$

(A) $\frac{1}{2}\sqrt{x^2+x+1}+\frac{1}{2}\cosh^{-1}\left(\frac{x+2}{\sqrt{3}}\right)+c$

(B) $\frac{1}{2}\sqrt{x^2+x+1}+\frac{2}{\sqrt{3}}\mathrm{Tan}^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)+c$

(C) $\sqrt{x^2+x+1}+\frac{2}{\sqrt{3}}\log|x^2+x+1|+c$

(D) $\sqrt{x^2+x+1}+\frac{1}{2}\sinh^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)+c$

Answer: (D) $\sqrt{x^2+x+1}+\frac{1}{2}\sinh^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)+c$ · The council's preliminary key

Q203 AP EAPCET 2024 · 18 May · Shift 1 MCQ

$\int(\tan^7 x+\tan x)\,dx =$

(A) $\frac{\tan^2 x}{12}(2\tan^4 x-3\tan^2 x+6)+c$

(B) $\frac{\tan^2 x}{6}-\frac{\tan^5 x}{4}+\frac{\tan^4 x}{2}+c$

(C) $\frac{\tan^2 x}{6}(\tan^4 x+3\tan^2 x+4)+c$

(D) $\frac{\tan x}{12}(\tan^4 x-3\tan^2 x+6)+c$

Answer: (A) $\frac{\tan^2 x}{12}(2\tan^4 x-3\tan^2 x+6)+c$ · The council's preliminary key

Q204 AP EAPCET 2024 · 18 May · Shift 1 MCQ

$$\int \frac{\operatorname{cosec} x}{3\cos x+4\sin x}\,dx =$$

(A) $\frac{1}{2}\log\left|\frac{\cos x}{3\sin x+4\cos x}\right|+c$

(B) $\frac{1}{3}\log\left|\frac{\sin x}{3\cos x+4\sin x}\right|+c$

(C) $\frac{1}{3}\log\left|\frac{3\cos x+\sin x}{3\cos x+4\sin x}\right|+c$

(D) $\frac{1}{2}\log\left|\frac{\cos x+4\sin x}{3\cos x+4\sin x}\right|+c$

Answer: (B) $\frac{1}{3}\log\left|\frac{\sin x}{3\cos x+4\sin x}\right|+c$ · The council's preliminary key

Q205 AP EAPCET 2024 · 18 May · Shift 1 MCQ

$\int e^{2x+3}\sin 6x\,dx =$

(A) $\frac{e^{2x+3}}{40}(2\sin 6x+6\cos 6x)+c$
(B) $\frac{e^{2x+3}}{40}(2\cos 6x+6\sin 6x)+c$
(C) $\frac{e^{2x+3}}{20}(\sin 6x-3\cos 6x)+c$
(D) $\frac{e^{2x+3}}{20}(\cos 6x-3\sin 6x)+c$

Answer: (C) $\frac{e^{2x+3}}{20}(\sin 6x-3\cos 6x)+c$ · The council's preliminary key

Q206 TS EAPCET 2024 · 11 May · Shift 1 MCQ

$$\int \frac{\sec x}{3(\sec x+\tan x)+2}\,dx =$$

(A) $\frac{1}{2}\log\left|\frac{\tan\frac{x}{2}+1}{\tan\frac{x}{2}+5}\right|+c$
(B) $\frac{2}{\sqrt{11}}\mathrm{Tan}^{-1}\left(\frac{3\tan\frac{x}{2}+4}{\sqrt{11}}\right)+c$
(C) $\log|3\sec x+2\tan x|+c$
(D) $\log|3\tan x+2\sec x|+c$

Answer: (A) $\frac{1}{2}\log\left|\frac{\tan\frac{x}{2}+1}{\tan\frac{x}{2}+5}\right|+c$ · The council's preliminary key

Q207 TS EAPCET 2024 · 11 May · Shift 1 MCQ

$\int \frac{dx}{4+3\cot x}\,dx =$

(A) $-\frac{3}{25}\log|4+3\cot x|+\frac{4}{25}x+c$
(B) $-\frac{3}{25}\log|4\sin x+3\cos x|+\frac{4}{25}x+c$
(C) $\frac{4}{25}\log|4\sin x+3\cos x|-\frac{3}{25}x+c$
(D) $\frac{4}{25}\log|4+3\cot x|-\frac{3}{25}x+c$

Answer: (B) $-\frac{3}{25}\log|4\sin x+3\cos x|+\frac{4}{25}x+c$ · The council's preliminary key

Q208 TS EAPCET 2024 · 11 May · Shift 1 MCQ

$$\int \frac{dx}{(x+1)\sqrt{x^2+4}} =$$

(A) $\frac{1}{2}\sqrt{\frac{x+1}{x+2}}+c$
(B) $\log\left|\frac{x+2}{x+1}\right|+c$
(C) $-\frac{1}{\sqrt{5}}\mathrm{Sinh}^{-1}\left(\frac{4-x}{2(x+1)}\right)+c$
(D) $-\frac{1}{\sqrt{5}}\mathrm{Cosh}^{-1}\left(\frac{4+x}{2(x-1)}\right)+c$

Answer: (C) $-\frac{1}{\sqrt{5}}\mathrm{Sinh}^{-1}\left(\frac{4-x}{2(x+1)}\right)+c$ · The council's preliminary key

Q209 TS EAPCET 2024 · 11 May · Shift 1 MCQ

If $\int e^x(x^3+x^2-x+4)dx=e^x f(x)+\mathrm{c}$, then $f(1)=$

EdLoop EAPCET

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

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

Q210 TS EAPCET 2024 · 10 May · Shift 1 MCQ

$\int \sqrt{4\cos^2 x - 5\sin^2 x}\ \cos x\, dx =$

(A) $\frac{1}{2}\cos x\sqrt{4-9\sin^2 x} + \frac{2}{3}\mathrm{Sin}^{-1}\left(\frac{3\sin x}{2}\right) + \mathrm{c}$
(B) $\frac{1}{2}\sin x\sqrt{4-9\sin^2 x} + \frac{2}{3}\mathrm{Cos}^{-1}\left(\frac{3\cos x}{2}\right) + \mathrm{c}$
(C) $\frac{1}{2}\cos x\sqrt{1-9\cos^2 x} + \frac{2}{3}\mathrm{Sin}^{-1}\left(\frac{3\cos x}{2}\right) + \mathrm{c}$
(D) $\frac{1}{2}\sin x\sqrt{4-9\sin^2 x} + \frac{2}{3}\mathrm{Sin}^{-1}\left(\frac{3\sin x}{2}\right) + \mathrm{c}$

Answer: (D) $\frac{1}{2}\sin x\sqrt{4-9\sin^2 x} + \frac{2}{3}\mathrm{Sin}^{-1}\left(\frac{3\sin x}{2}\right) + \mathrm{c}$ · The council's preliminary key

Q211 TS EAPCET 2024 · 10 May · Shift 1 MCQ

$$\int \left(\frac{4\tan^4 x + 3\tan^2 x - 1}{\tan^2 x + 4}\right) dx =$$

(A) $4\tan x - \frac{17}{4}\mathrm{Tan}^{-1}\left(\frac{\tan x}{4}\right) + c$
(B) $4\tan x - \frac{17}{4}\mathrm{Tan}^{-1}\left(\frac{\tan x}{2}\right) + c$
(C) $4\tan x - \frac{17}{2}\mathrm{Tan}^{-1}\left(\frac{\tan x}{2}\right) + c$
(D) $2\tan x - \frac{17}{2}\mathrm{Tan}^{-1}\left(\frac{\tan x}{2}\right) + c$

Answer: (C) $4\tan x - \frac{17}{2}\mathrm{Tan}^{-1}\left(\frac{\tan x}{2}\right) + c$ · The council's preliminary key

Q212 TS EAPCET 2024 · 10 May · Shift 1 MCQ

$$\int \left(\frac{(\sin^4 x + 2\cos^2 x - 1)\cos x}{(1+\sin x)^6}\right) dx =$$

(A) $\dfrac{\sin^6 x}{6(1+\sin x)^6} + c$
(B) $-\dfrac{\sin^6 x}{6(1+\sin x)^6} + c$
(C) $\dfrac{\cos^6 x}{6(1+\sin x)^6} + c$
(D) $-\dfrac{\cos^6 x}{6(1+\sin x)^6} + c$

Answer: (D) $-\dfrac{\cos^6 x}{6(1+\sin x)^6} + c$ · The council's preliminary key

EdLoop EAPCET

Q213 TS EAPCET 2024 · 10 May · Shift 1 MCQ

$\int (\log x)^3\, dx =$

(A) $(\log x)^3 - 3(\log x)^2 + 6\log x - 6 + c$

(B) $x\left[(\log x)^3 - 3(\log x)^2 + 6(\log x) - 6\right] + c$

(C) $(x\log x)^3 - 3(x\log x)^2 + 6x(\log x) - 6 + c$

(D) $\frac{1}{x}\left[(\log x)^3 - 3(\log x)^2 + 6\log x - 6\right] + c$

Answer: (B) $x\left[(\log x)^3 - 3(\log x)^2 + 6(\log x) - 6\right] + c$ · The council's preliminary key

Q214 TS EAPCET 2024 · 10 May · Shift 2 MCQ

If $\int \frac{1}{x^4+8x^2+9}dx = \frac{1}{k}\left[\frac{1}{\sqrt{14}}\mathrm{Tan}^{-1}(f(x)) - \frac{1}{\sqrt{2}}\mathrm{Tan}^{-1}(g(x))\right] + c$, then $\sqrt{\frac{k}{2} + f(\sqrt{3}) + g(1)} =$

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

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

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

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

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

Q215 TS EAPCET 2024 · 10 May · Shift 2 MCQ

If $\int \left(1 + x - x^{-1}\right) e^{x+x^{-1}}\, dx = f(x) + c$, then $f(1) - f(-1) =$

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

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

(C) $e + \frac{1}{e}$

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

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

Q216 TS EAPCET 2024 · 10 May · Shift 2 MCQ

$$\int \frac{1}{x^m \sqrt[m]{x^m + 1}}\, dx =$$

(A) $\frac{1}{m-1}\left(\frac{\sqrt[m]{x^m+1}}{x}\right)^m + c$

(B) $\frac{-1}{m-1}\left(\frac{\sqrt[m]{x^m+1}}{x}\right)^{m-1} + c$

(C) $\frac{-1}{m}\left(\frac{\sqrt[m]{x^m+1}}{x}\right)^m + c$

(D) $\frac{1}{m}\left(\frac{\sqrt[m-1]{x^m+1}}{x}\right)^m + c$

Answer: (B) $\frac{-1}{m-1}\left(\frac{\sqrt[m]{x^m+1}}{x}\right)^{m-1} + c$ · The council's preliminary key

EdLoop EAPCET

Q217 TS EAPCET 2024 · 10 May · Shift 2 MCQ

If $\int \left(\sqrt{\operatorname{cosec} x+1}\right) dx = k \operatorname{Tan}^{-1}(f(x)) + c$, then $\frac{1}{k} f\left(\frac{\pi}{6}\right) =$

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

Options (4) or (1) were accepted. More than one answer was accepted. · The council's preliminary key

Q218 TS EAPCET 2024 · 9 May · Shift 1 MCQ

$\int \left(\sqrt{1-\sin x}+\sqrt{1+\sin x}\right) dx = f(x) + c$, where c is the constant of integration. If $\frac{5\pi}{2} < x < \frac{7\pi}{2}$ and $f\left(\frac{8\pi}{3}\right) = -2$, then $f'\left(\frac{8\pi}{3}\right) =$

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

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

Q219 TS EAPCET 2024 · 9 May · Shift 1 MCQ

If $f(x) = \int \frac{\sin 2x + 2\cos x}{4\sin^2 x + 5\sin x + 1} dx$ and $f(0) = 0$, then $f(\pi/6) =$

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

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

Q220 TS EAPCET 2024 · 9 May · Shift 1 MCQ

$$\int \frac{(1-4\sin^2 x)\cos x}{\cos(3x+2)}\,\mathrm{d}x =$$

(A) $(\cos 2)x - \frac{1}{3}(\sin 2)\log|\sec(3x+2)| + \mathrm{c}$
(B) $(\sin 2)x - \frac{1}{3}(\cos 2)\log|\cos(3x+2)| + \mathrm{c}$
(C) $(\sin 2)x + \frac{1}{3}(\cos 2)\log|\cos(3x+2)| + \mathrm{c}$
(D) $(\cos 2)x + \frac{1}{3}(\sin 2)\log|\sec(3x+2)| + \mathrm{c}$

Answer: (D) $(\cos 2)x + \frac{1}{3}(\sin 2)\log|\sec(3x+2)| + \mathrm{c}$ · The council's preliminary key

Q221 TS EAPCET 2024 · 9 May · Shift 1 MCQ

$\int \frac{x^5+x}{x^8+1} dx =$

(A) $\frac{1}{2\sqrt{2}}\mathrm{Tan}^{-1}\left(\frac{x^4-1}{\sqrt{2}x^2}\right)+c$

(B) $\log(x^5+x^2)-\log(x^3+x)+\log(x+1)+c$

(C) $\frac{2}{9}x^8-\frac{4}{9}x^6+\frac{1}{9}x^4-\frac{1}{3}x^2+c$

(D) $\frac{1}{\sqrt{2}}\mathrm{Tan}^{-1}\left(\frac{x^5-1}{\sqrt{2}x^3}\right)+c$

Answer: (A) $\frac{1}{2\sqrt{2}}\mathrm{Tan}^{-1}\left(\frac{x^4-1}{\sqrt{2}x^2}\right)+c$ · The council's preliminary key

Q222 TS EAPCET 2024 · 9 May · Shift 1 MCQ

If the slope of the tangent drawn at any point (x,y) on the curve $y=f(x)$ is $(6x^2+10x-9)$ and $f(2)=0$, then $f(-2)=$

(A) 0

(B) 4

(C) -6

(D) -13

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

Q223 TS EAPCET 2024 · 9 May · Shift 2 MCQ

$\int e^{-2x}\left(\tan 2x-2\sec^2 2x\tan 2x\right)dx=$

(A) $e^{-2x}\tan 2x+c$

(B) $-\frac{e^{-2x}}{2}\left[\sec^2 2x+\tan 2x\right]+c$

(C) $-\frac{e^{-2x}}{2}\left[\tan 2x-\sec^2 2x\right]+c$

(D) $e^{-2x}\sec^2 2x+c$

Answer: (B) $-\frac{e^{-2x}}{2}\left[\sec^2 2x+\tan 2x\right]+c$ · The council's preliminary key

Q224 TS EAPCET 2024 · 9 May · Shift 2 MCQ

If $\int x^3\sin 3x\,dx=f(x)\cos 3x+g(x)\sin 3x+c$ then, $27\left(f(x)+xg(x)\right)=$

(A) $18x^3+4x$

(B) $8x$

(C) $4x$

(D) $18x^3+8x$

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

Q225 TS EAPCET 2024 · 9 May · Shift 2 MCQ

$$\int\frac{dx}{9\cos^2 2x+16\sin^2 2x}=$$

(A) $\frac{1}{25}\mathrm{Tan}^{-1}\left(\frac{3}{4}\sec^2 2x\right)+c$
(B) $\frac{1}{25}\mathrm{Tan}^{-1}\left(\frac{4}{3}\sec^2 2x\right)+c$
(C) $\frac{1}{24}\mathrm{Tan}^{-1}\left(\frac{3}{4}\tan 2x\right)+c$
(D) $\frac{1}{24}\mathrm{Tan}^{-1}\left(\frac{4}{3}\tan 2x\right)+c$

Answer: (D) $\frac{1}{24}\mathrm{Tan}^{-1}\left(\frac{4}{3}\tan 2x\right)+c$ · The council's preliminary key

Q226 TS EAPCET 2024 · 9 May · Shift 2 MCQ

$\int \frac{2\cos 3x-3\sin 3x}{\cos 3x+2\sin 3x}\,dx =$

(A) $\frac{7}{15}\log|\cos 3x+2\sin 3x|-\frac{4}{5}x+c$
(B) $-\frac{4}{5}\log|\cos 3x+2\sin 3x|+\frac{7x}{5}+c$
(C) $\frac{7}{5}\log|\cos 3x+2\sin 3x|-\frac{4}{5}x+c$
(D) $-\frac{8}{15}\log|\cos 3x+2\sin 3x|+\frac{x}{5}+c$

Answer: (A) $\frac{7}{15}\log|\cos 3x+2\sin 3x|-\frac{4}{5}x+c$ · The council's preliminary key

Q227 AP EAPCET 2023 · 19 May · Shift 1 MCQ

If $f(x)=\frac{x}{(1+nx^n)^{1/n}}$ for $n\geq 2$, then $\int x^{n-2}f(x)\,dx =$

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

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

Q228 AP EAPCET 2023 · 19 May · Shift 1 MCQ

$$\int \frac{1+x\cos x}{x\left[1-x^2\left(e^{\sin x}\right)^2\right]}\,dx =$$

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

Answer: (C) $\frac{1}{2}\log\left|\frac{(xe^{\sin x})^2}{(xe^{\sin x})^2-1}\right|+c$ · The council's preliminary key

EdLoop EAPCET

Q229 AP EAPCET 2023 · 19 May · Shift 1 MCQ

$\int \frac{dx}{(x-1)\sqrt{x+2}} =$

(A) $\frac{2}{\sqrt{3}} \log \left| \frac{\sqrt{(x+2)}+\sqrt{3}}{\sqrt{(x+2)}-\sqrt{3}} \right| + c$

(B) $\frac{-1}{\sqrt{3}} \log \left| \frac{\sqrt{(x+2)}-\sqrt{3}}{\sqrt{(x+2)}+\sqrt{3}} \right| + c$

(C) $\frac{1}{\sqrt{3}} \log \left| \frac{\sqrt{(x+2)}+\sqrt{3}}{\sqrt{(x+2)}-\sqrt{3}} \right| + c$

(D) $\frac{1}{\sqrt{3}} \log \left| \frac{\sqrt{(x+2)}-\sqrt{3}}{\sqrt{(x+2)}+\sqrt{3}} \right| + c$

Answer: (D) $\frac{1}{\sqrt{3}} \log \left| \frac{\sqrt{(x+2)}-\sqrt{3}}{\sqrt{(x+2)}+\sqrt{3}} \right| + c$ · The council's preliminary key

Q230 AP EAPCET 2023 · 19 May · Shift 1 MCQ

$$\int e^{-2x} \left(\frac{1-\sin 2x}{1+\cos 2x} \right) dx =$$

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

(B) $-\frac{1}{2} e^{-2x} \tan x + c$

(C) $\frac{1}{2} e^{-2x} \cot x + c$

(D) $-\frac{1}{2} e^{-2x} \cot x + c$

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

Q231 AP EAPCET 2023 · 18 May · Shift 1 MCQ

$$\int \frac{dx}{\sin(x-a)\cos(x-b)} =$$

(A) $\frac{1}{\sin(a-b)} \log \left| \frac{\sin(x-a)}{\cos(x-b)} \right| + C$

(B) $\frac{1}{\cos(b-a)} \log \left| \frac{\sin(x-a)}{\cos(x-b)} \right| + C$

(C) $\frac{1}{\cos(b-a)} [\log |\sin(x-a)\cos(x-b)|] + C$

(D) $\frac{1}{\sin(a-b)} [\log |\sin(x-a)\cos(x-b)|] + C$

Answer: (B) $\frac{1}{\cos(b-a)} \log \left| \frac{\sin(x-a)}{\cos(x-b)} \right| + C$ · The council's preliminary key

Q232 AP EAPCET 2023 · 18 May · Shift 1 MCQ

If $I_n = \int \tan^n x \, dx \ (n > 1)$, then $I_4 + I_6 =$

(A) $\frac{1}{5}\tan^5 x + C$
(B) $-\frac{1}{5}\tan^5 x + C$
(C) $\frac{1}{10}\tan^5 x + C$
(D) $-\frac{1}{10}\tan^5 x + C$

Answer: (A) $\frac{1}{5}\tan^5 x + C$ · The council's preliminary key

Q233 AP EAPCET 2023 · 18 May · Shift 1 MCQ

If $\int \sqrt{x}(1-x^3)^{\frac{-1}{2}}\,dx = \frac{2}{3}g(f(x)) + c$, then

(A) $f(x) = \sqrt{x},\ g(x) = \sin^{-1} x$
(B) $f(x) = x^{\frac{3}{2}},\ g(x) = \sin^{-1} x$
(C) $f(x) = x^{\frac{3}{2}},\ g(x) = \cos^{-1} x$
(D) $f(x) = \sqrt{x},\ g(x) = \cos^{-1} x$

Answer: (B) $f(x) = x^{\frac{3}{2}},\ g(x) = \sin^{-1} x$ · The council's preliminary key

Q234 AP EAPCET 2023 · 18 May · Shift 1 MCQ

$\int \frac{x^2}{(x^2-1)(x^2+1)}dx =$

(A) $\frac{1}{4}\log\left|\frac{x+1}{x-1}\right| - \frac{1}{2}\mathrm{Tan}^{-1}x + c$
(B) $\frac{1}{4}\log\left|\frac{x-1}{x+1}\right| + \frac{1}{2}\mathrm{Tan}^{-1}x + c$
(C) $\frac{1}{4}\log\left|\frac{x-1}{x+1}\right| - \frac{1}{2}\mathrm{Tan}^{-1}x + c$
(D) $\frac{1}{4}\log\left|\frac{x+1}{x-1}\right| + \frac{1}{2}\mathrm{Tan}^{-1}x + c$

Answer: (B) $\frac{1}{4}\log\left|\frac{x-1}{x+1}\right| + \frac{1}{2}\mathrm{Tan}^{-1}x + c$ · The council's preliminary key

Q235 AP EAPCET 2023 · 18 May · Shift 1 MCQ

$$\int_{\frac{1}{25}}^{3} \frac{e^{\frac{3}{x}}}{x^2}\,dx =$$

(A) $-\frac{1}{3}\left(e^{75} - e\right)$
(B) $\frac{1}{3}\left(e^{50} - e^{25}\right)$
(C) $-\frac{1}{3}\left(e^{50} - e\right)$
(D) $\frac{1}{3}\left(e^{75} - e\right)$

Answer: (D) $\frac{1}{3}\left(e^{75} - e\right)$ · The council's preliminary key

Q236 AP EAPCET 2023 · 18 May · Shift 2 MCQ

If $\int \frac{dx}{1+\sin x} = \tan\left(\frac{x}{2} - \theta\right) + C$, then $\theta =$

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

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

Q237 AP EAPCET 2023 · 18 May · Shift 2 MCQ

$\int \left(\frac{8^{1+x}+4^{1+x}}{2^{2x}}\right) dx =$

(A) $\frac{2^x}{\log 2} + 4x + C$
(B) $8 \cdot \frac{2^x}{\log 2} - 4x + C$
(C) $8 \cdot \frac{2^x}{\log 2} + 4x + C$
(D) $\frac{2^x}{\log 2} - 4x + C$

Answer: (C) $8 \cdot \frac{2^x}{\log 2} + 4x + C$ · The council's preliminary key

Q238 AP EAPCET 2023 · 17 May · Shift 1 MCQ

$$\int e^{\sin x} \frac{(x\cos^3 x - \sin x)}{\cos^2 x} dx =$$

(A) $e^{\sin x}(x - \sec x) + C$
(B) $e^{\sin x}(x - \operatorname{cosec} x) + C$
(C) $e^{\sin x}(x + \sec x) + C$
(D) $e^{\sin x}(x + \operatorname{cosec} x) + C$

Answer: (A) $e^{\sin x}(x - \sec x) + C$ · The council's preliminary key

Q239 AP EAPCET 2023 · 17 May · Shift 1 MCQ

If $f'(x) = a\cos x + b\sin x$ and $f'(0) = 4$, $f(0) = 3$, $f\left(\frac{\pi}{2}\right) = 5$, then $f(x) =$

(A) $2\cos x + 4\sin x + 1$
(B) $4\cos x + 2\sin x + 1$
(C) $2\cos x + 3\sin x + 1$
(D) $4\cos x + \sin x + 1$

Answer: (A) $2\cos x + 4\sin x + 1$ · The council's preliminary key

Q240 AP EAPCET 2023 · 17 May · Shift 1 MCQ

If $\int f(x)dx = \Psi(x)$, then $\int x^5 f(x^3)dx =$

EdLoop EAPCET

(A) $\frac{1}{3}\left[x^3\Psi(x^3)\right]-\int x^2\Psi(x^3)dx$
(B) $\frac{1}{3}\left[x^3\Psi(x^3)\right]+\int x^2\Psi(x^3)dx$
(C) $-\frac{1}{3}\left[x^3\Psi(x^3)\right]-\int x^3\Psi(x^3)dx$
(D) $-\frac{1}{3}\left[x^3\Psi(x^3)\right]+\int x^3\Psi(x^3)dx$

Answer: (A) $\frac{1}{3}\left[x^3\Psi(x^3)\right]-\int x^2\Psi(x^3)dx$ · The council's preliminary key

Q241 AP EAPCET 2023 · 17 May · Shift 1 MCQ

If $\int \frac{\sin^2\alpha-\sin^2 x}{\cos x-\cos\alpha}dx = f(x)+Ax+B$ and $B\in R$, then

(A) $f(x)=2\sin x,\ A=\cos\alpha$
(B) $f(x)=2\sin x,\ A=2\cos\alpha$
(C) $f(x)=\sin x,\ A=\cos\alpha$
(D) $f(x)=\sin x,\ A=2\cos\alpha$

Answer: (C) $f(x)=\sin x,\ A=\cos\alpha$ · The council's preliminary key

Q242 AP EAPCET 2023 · 17 May · Shift 1 MCQ

$\int(x^{3m}+x^{2m}+x^m)(2x^{2m}+3x^m+6)^{\frac{1}{m}}dx =$

(A) $\frac{1}{6(m+1)}(2x^{3m}+3x^{2m}+6x^m)^{\frac{m+1}{m}}+C$
(B) $\frac{1}{6(m+1)}(2x^{3m}+3x^{2m}+6x^m)^{\frac{m-1}{m}}+C$
(C) $\frac{1}{6(m+1)}(2x^{3m}+3x^{2m}+6)^{\frac{m+1}{m}}+C$
(D) $\frac{1}{6(m-1)}(2x^{3m}+mx^{2m}+6x^m)^{\frac{m-1}{m}}+C$

Answer: (A) $\frac{1}{6(m+1)}(2x^{3m}+3x^{2m}+6x^m)^{\frac{m+1}{m}}+C$ · The council's preliminary key

Q243 AP EAPCET 2023 · 17 May · Shift 2 MCQ

$$\int \frac{dx}{(2ax+x^2)^{\frac{3}{2}}} =$$

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

Answer: (D) $\frac{-1}{a^2}\left(\frac{x+a}{\sqrt{2ax+x^2}}\right)+C$ · The council's preliminary key

Q244 AP EAPCET 2023 · 17 May · Shift 2 MCQ

If $f(x)=\lim_{n\to\infty} n^2\left(x^{\frac{1}{n}}-x^{\frac{1}{n+1}}\right),\ x>0$, then $\int x\,f(x)\,dx =$

EdLoop EAPCET

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

Answer: (C) $\frac{x^2}{2}\log x - \frac{x^2}{4} + C$ · The council's preliminary key

Q245 AP EAPCET 2023 · 17 May · Shift 2 MCQ

$$\int \frac{1-\cos x}{\cos x(1+\cos x)}\,dx =$$

(A) $\log|\sec x + \tan x| - 2(\operatorname{cosec} x - \cot x) + C$
(B) $\log|\sec x + \tan x| - 2(\operatorname{cosec} x + \cot x) + C$
(C) $\log|\sec x + \tan x| + 2(\operatorname{cosec} x - \cot x) + C$
(D) $\log|\sec x + \tan x| + 2(\operatorname{cosec} x + \cot x) + C$

Answer: (A) $\log|\sec x + \tan x| - 2(\operatorname{cosec} x - \cot x) + C$ · The council's preliminary key

Q246 AP EAPCET 2023 · 17 May · Shift 2 MCQ

$g(x)$ is an anti derivative of $f(x) = 1 + 2^x \log 2$ and the graph of $y = g(x)$ passes through $\left(-1, \frac{1}{2}\right)$. Then the curve meets the Y – axis at

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

Answer: (B) $(0, 2)$ · The council's preliminary key

Q247 AP EAPCET 2023 · 17 May · Shift 2 MCQ

If $\int \frac{x^3}{\sqrt{1+x^2}}\,dx = A(1+x^2)^{\frac{3}{2}} + B(1+x^2)^{\frac{1}{2}} + C$, then $A + B =$

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

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

Q248 AP EAPCET 2023 · 16 May · Shift 1 MCQ

$$\int \frac{x^2 - 1}{x^3\sqrt{2x^4 - 2x^2 + 1}}\,dx =$$

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

Answer: (B) $\frac{1}{2x^2}\sqrt{2x^4-2x^2+1}+C$ · The council's preliminary key

Q249 AP EAPCET 2023 · 16 May · Shift 1 MCQ

If the graph of the anti derivative $g(x)$ of $f(x)=\log(\log x)+(\log x)^{-2}$ passes through $(e,\ 2023-e)$ and the term independent of x in $g(x)$ is k, then the sum of all the digits of k is

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

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

Q250 AP EAPCET 2023 · 16 May · Shift 1 MCQ

$\int 3^{-\log_9 x^2}\,dx=$

(A) $2\log|x|+C$
(B) $\log|x|+C$
(C) $-\log|x|+C$
(D) $-2\log|x|+C$

Answer: (B) $\log|x|+C$ · The council's preliminary key

Q251 AP EAPCET 2023 · 16 May · Shift 2 MCQ

$$\int \frac{\sin^{-1}\sqrt{x}-\cos^{-1}\sqrt{x}}{\sqrt{x}\left(\sin^{-1}\sqrt{x}+\cos^{-1}\sqrt{x}\right)}\,dx=$$

(A) $\frac{2}{\pi}\left[\sin^{-1}\sqrt{x}\,(2x-1)+\sqrt{x(1-x)}\right]+x+C$
(B) $\frac{8}{\pi}\left(\sqrt{x}\,\sin^{-1}\sqrt{x}+\sqrt{1-x}\right)-2\sqrt{x}+C$
(C) $\frac{2}{\pi}\left[(2x-1)\sin^{-1}\sqrt{x}-\sqrt{x(1-x)}\right]-x+C$
(D) $\frac{2}{\pi}\left[(2x-1)\sin^{-1}\sqrt{x}-\sqrt{x(1-x)}\right]+x+C$

Answer: (B) $\frac{8}{\pi}\left(\sqrt{x}\,\sin^{-1}\sqrt{x}+\sqrt{1-x}\right)-2\sqrt{x}+C$ · The council's preliminary key

Q252 AP EAPCET 2023 · 16 May · Shift 2 MCQ

If $\int \frac{3x+2}{4x^2+4x+5}\,dx=A\log(4x^2+4x+5)+B\,\mathrm{Tan}^{-1}\left(x+\frac{1}{2}\right)+C$, then $(A,B)=$

(A) $\left(\frac{3}{8}, \frac{1}{8}\right)$
(B) $\left(\frac{5}{8}, \frac{1}{8}\right)$
(C) $\left(-\frac{3}{8}, \frac{1}{8}\right)$
(D) $\left(-\frac{5}{8}, \frac{1}{8}\right)$

Answer: (A) $\left(\frac{3}{8}, \frac{1}{8}\right)$ · The council's preliminary key

Q253 AP EAPCET 2023 · 16 May · Shift 2 MCQ

$\int e^x \left(\log x + \frac{1}{x^2}\right) dx =$

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

Answer: (B) $e^x \left(\log x - \frac{1}{x}\right) + C$ · The council's preliminary key

Q254 AP EAPCET 2023 · 16 May · Shift 2 MCQ

$$\int \frac{\sqrt{x^4 + x^{-4} + 2}}{x^3} dx =$$

(A) $\log|x| - \frac{1}{4x^4} + C$
(B) $\log|x| + \frac{1}{4x^4} + C$
(C) $\log|x| - \frac{4}{x^4} + C$
(D) $\log|x| + \frac{4}{x^4} + C$

Answer: (A) $\log|x| - \frac{1}{4x^4} + C$ · The council's preliminary key

Q255 AP EAPCET 2023 · 15 May · Shift 1 MCQ

If $\int \left(\frac{4e^x + 6e^{-x}}{9e^x - 4e^{-x}}\right) dx = Ax + B \log\left|\left(9e^{2x} - 4\right)\right| + C$, then $(A, B) =$

(A) $\left(\frac{3}{2}, \frac{35}{36}\right)$
(B) $\left(\frac{-3}{2}, \frac{-35}{36}\right)$
(C) $\left(\frac{-3}{2}, \frac{35}{36}\right)$
(D) $\left(\frac{3}{2}, \frac{-35}{36}\right)$

Answer: (C) $\left(\frac{-3}{2}, \frac{35}{36}\right)$ · The council's preliminary key

Q256 AP EAPCET 2023 · 15 May · Shift 1 MCQ

If $f(x) = \int \frac{dx}{(x^2+2)}$ and $f(\sqrt{2}) = 0$, then $f(0) =$

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

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

Q257 AP EAPCET 2023 · 15 May · Shift 1 MCQ

$\int e^x \left(\frac{2+\sin 2x}{1+\cos 2x}\right) dx =$

(A) $e^x \sec x + C$
(B) $e^x \tan x + C$
(C) $e^x \cot x + C$
(D) $e^x \operatorname{cosec} x + C$

Answer: (B) $e^x \tan x + C$ · The council's preliminary key

Q258 AP EAPCET 2023 · 15 May · Shift 2 MCQ

$$\int \frac{dx}{4+5\cos x} =$$

(A) $-\frac{1}{3}\log\left|\frac{3+\tan\frac{x}{2}}{3-\tan\frac{x}{2}}\right| + C$
(B) $\frac{1}{3}\log\left|\frac{3+\tan\frac{x}{2}}{3-\tan\frac{x}{2}}\right| + C$
(C) $-\frac{1}{9}\log\left|\frac{3-\tan\frac{x}{2}}{3+\tan\frac{x}{2}}\right| + C$
(D) $\frac{1}{9}\log\left|\frac{3-\tan\frac{x}{2}}{3+\tan\frac{x}{2}}\right| + C$

Answer: (B) $\frac{1}{3}\log\left|\frac{3+\tan\frac{x}{2}}{3-\tan\frac{x}{2}}\right| + C$ · The council's preliminary key

Q259 AP EAPCET 2023 · 15 May · Shift 2 MCQ

If $f(x) = \int \frac{5x^8+7x^6}{(x^2+2x^7+1)^2} dx$ $(x \geq 0)$ and $f(0) = 0$, then the value of $f(1) =$

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

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

Q260 AP EAPCET 2023 · 15 May · Shift 2 MCQ

$\int x^3 (\log x)^2 dx =$

EdLoop EAPCET

(A) $(\log x)^2\frac{x^4}{4}+\frac{1}{2}\left[(\log x)\frac{x^4}{4}+\frac{x^4}{16}\right]+C$

(B) $(\log x)^2\frac{x^4}{4}-\frac{1}{2}\left[(\log x)\frac{x^4}{4}+\frac{x^4}{16}\right]+C$

(C) $(\log x)^2\frac{x^4}{4}-\frac{1}{2}\left[(\log x)\frac{x^4}{4}-\frac{x^4}{16}\right]+C$

(D) $(\log x)^2\frac{x^4}{4}+\frac{1}{2}\left[(\log x)\frac{x^4}{4}-\frac{x^4}{16}\right]+C$

Answer: (C) $(\log x)^2\frac{x^4}{4}-\frac{1}{2}\left[(\log x)\frac{x^4}{4}-\frac{x^4}{16}\right]+C$ · The council's preliminary key

Q261 AP EAPCET 2023 · 15 May · Shift 2 MCQ

If $\int\frac{1}{x[(\log x)^2+4\log x-1]}dx=A\log\left[\frac{\log x+B}{\log x+C}\right]+K$ where K is the constant of integration, then

(A) $A=\frac{1}{2\sqrt{5}},\ B=(2-\sqrt{5}),\ C=(2+\sqrt{5})$

(B) $A=-\frac{1}{2\sqrt{5}},\ B=(2-\sqrt{5}),\ C=(2+\sqrt{5})$

(C) $A=\frac{1}{2\sqrt{5}},\ B=(2+\sqrt{5}),\ C=(2-\sqrt{5})$

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

Answer: (A) $A=\frac{1}{2\sqrt{5}},\ B=(2-\sqrt{5}),\ C=(2+\sqrt{5})$ · The council's preliminary key

Q262 AP EAPCET 2023 · 15 May · Shift 2 MCQ

$\int_0^1\left(\sqrt{10}\right)^{2x}dx=$

(A) $\frac{10}{\log 10}$

(B) $\frac{9}{\log 10}$

(C) $\frac{1}{\log 10}$

(D) $\frac{4}{\log 5}$

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

Q263 TS EAMCET 2023 · 14 May · Shift 1 MCQ

If $\int\frac{x^{49}\mathrm{Tan}^{-1}(x^{50})}{(1+x^{100})}dx=k\left(\mathrm{Tan}^{-1}(x^{50})\right)^2+c$, then $k=$

(A) $\frac{-1}{100}$

(B) $\frac{1}{50}$

(C) $\frac{-1}{50}$

(D) $\frac{1}{100}$

Answer: (D) $\frac{1}{100}$ · The council's preliminary key

Q264 TS EAMCET 2023 · 14 May · Shift 1 MCQ

If $\int (\log x)^3 x^5\, dx = \frac{x^6}{A}\left[B(\log x)^3 + C(\log x)^2 + D(\log x) - 1\right] + k$ and A, B, C, D are integers, then $A - (B + C + D) =$

(A) 172
(B) 184
(C) 192
(D) 216

Answer: (C) 192 · The council's preliminary key

Q265 TS EAMCET 2023 · 14 May · Shift 1 MCQ

$\int \frac{dx}{(x^2+1)(x^2+4)} =$

(A) $\frac{1}{3}\text{Tan}^{-1}x + \frac{1}{6}\text{Tan}^{-1}\left(\frac{x}{2}\right) + c$
(B) $\frac{1}{3}\text{Tan}^{-1}x - \frac{1}{3}\text{Tan}^{-1}\left(\frac{x}{2}\right) + c$
(C) $\frac{1}{3}\text{Tan}^{-1}x + \frac{1}{3}\text{Tan}^{-1}\left(\frac{x}{2}\right) + c$
(D) $\frac{1}{3}\text{Tan}^{-1}x - \frac{1}{6}\text{Tan}^{-1}\left(\frac{x}{2}\right) + c$

Answer: (D) $\frac{1}{3}\text{Tan}^{-1}x - \frac{1}{6}\text{Tan}^{-1}\left(\frac{x}{2}\right) + c$ · The council's preliminary key

Q266 TS EAMCET 2023 · 14 May · Shift 1 MCQ

$$\int \frac{dx}{(x-1)^{\frac{3}{4}}(x+2)^{\frac{5}{4}}} =$$

(A) $\frac{4}{3}\left(\frac{x-1}{x+2}\right)^{\frac{1}{4}} + c$
(B) $\frac{3}{4}\left(\frac{x-1}{x-2}\right)^{\frac{1}{4}} + c$
(C) $\frac{4}{3}\left(\frac{x+2}{x-1}\right)^{\frac{1}{4}} + c$
(D) $\frac{3}{4}\left(\frac{x-2}{x-1}\right)^{\frac{1}{4}} + c$

Answer: (A) $\frac{4}{3}\left(\frac{x-1}{x+2}\right)^{\frac{1}{4}} + c$ · The council's preliminary key

Q267 TS EAMCET 2023 · 14 May · Shift 2 MCQ

$$\int \frac{\tan x}{\sec^2 x\,(1+\sec^6 x)^{\frac{2}{3}}}\, dx =$$

(A) $\frac{-1}{2}(1+\sec^6 x)^{\frac{1}{3}} + c$
(B) $2(1+\sec^6 x)^{\frac{4}{3}} + c$
(C) $\frac{-1}{2}(1+\cos^6 x)^{\frac{1}{3}} + c$
(D) $2(1+\cos^6 x)^{\frac{1}{3}} + c$

Answer: (C) $\frac{-1}{2}(1+\cos^6 x)^{\frac{1}{3}} + c$ · The council's preliminary key

EDLOOP EAPCET

Q268 TS EAMCET 2023 · 14 May · Shift 2 MCQ

$\int \frac{1}{(x-1)^{\frac{5}{7}}(x+1)^{\frac{9}{7}}}\,dx =$

(A) $\frac{7}{4}\left(\frac{x+1}{x-1}\right)^{\frac{2}{7}}+c$

(B) $\frac{-7}{4}\left(\frac{x+1}{x-1}\right)^{\frac{2}{7}}+c$

(C) $\frac{7}{4}\left(\frac{x-1}{x+1}\right)^{\frac{2}{7}}+c$

(D) $\frac{-7}{4}\left(\frac{x-1}{x+1}\right)^{\frac{2}{7}}+c$

Answer: (C) $\frac{7}{4}\left(\frac{x-1}{x+1}\right)^{\frac{2}{7}}+c$ · Checked by our team

Q269 TS EAMCET 2023 · 14 May · Shift 2 MCQ

$$\int \frac{1+\sqrt{3}\cot x}{1-\sqrt{3}\cot x}\,dx =$$

(A) $-\frac{x}{2}+\frac{\sqrt{3}}{2}\log\left|\sin\left(x-\frac{\pi}{3}\right)\right|+c$

(B) $\frac{x}{2}+\frac{\sqrt{3}}{2}\log\left|\sin\left(x-\frac{\pi}{3}\right)\right|+c$

(C) $-\frac{x}{2}-\frac{\sqrt{3}}{2}\log\left[\sin\left(x-\frac{\pi}{3}\right)\right]+c$

(D) $\frac{x}{2}-\frac{\sqrt{3}}{2}\log\left|\sin\left(x-\frac{\pi}{3}\right)\right|+c$

Answer: (A) $-\frac{x}{2}+\frac{\sqrt{3}}{2}\log\left|\sin\left(x-\frac{\pi}{3}\right)\right|+c$ · The council's preliminary key

Q270 TS EAMCET 2023 · 14 May · Shift 2 MCQ

If $\int \frac{1}{\operatorname{cosec} x+\cos x}\,dx=\frac{1}{2\sqrt{3}}\log|f(x)|-\int\frac{\cos x-\sin x}{2+\sin 2x}\,dx+c$ then at $x=\frac{\pi}{3}$, $|f(x)|=$

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

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

(C) $\frac{6\sqrt{3}-2}{\sqrt{3}+1}$

(D) $\frac{6\sqrt{3}+2}{\sqrt{3}+1}$

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

Q271 TS EAMCET 2023 · 13 May · Shift 1 MCQ

$\int \frac{1}{16-7\sin^2 x}\,dx =$

(A) $\frac{1}{12}\mathrm{Tan}^{-1}\left(\frac{3\tan x}{4}\right)+c$

(B) $\frac{1}{3}\mathrm{Sin}^{-1}\left(\frac{3\sin x}{4}\right)+c$

(C) $\frac{1}{12}\log\left(\frac{4-\sqrt{7}\sin x}{4+\sqrt{7}\sin x}\right)+c$

(D) $\frac{1}{12}\log\left(\frac{4+\sqrt{7}\sin x}{4-\sqrt{7}\sin x}\right)+c$

Answer: (A) $\frac{1}{12}\mathrm{Tan}^{-1}\left(\frac{3\tan x}{4}\right)+c$ · The council's preliminary key

EdLoop EAPCET

Q272 TS EAMCET 2023 · 13 May · Shift 1 MCQ

$\int \frac{\sec^2 x}{(\sec x+\tan x)^2}\,dx =$

(A) $\frac{3+(\sec x+\tan x)^2}{2(\sec x+\tan x)^3}+c$

(B) $-\frac{1+3(\sec x+\tan x)^2}{6(\sec x+\tan x)^3}+c$

(C) $-\frac{3+(\sec x+\tan x)^2}{2(\sec x+\tan x)^3}+c$

(D) $-\frac{1+(\sec x+\tan x)}{3(\sec x+\tan x)^2}+c$

Answer: (B) $-\frac{1+3(\sec x+\tan x)^2}{6(\sec x+\tan x)^3}+c$ · The council's preliminary key

Q273 TS EAMCET 2023 · 13 May · Shift 1 MCQ

$$\int \frac{1}{3\cos x-4\sin x+5}\,dx =$$

(A) $\frac{2}{\sqrt{5}}\mathrm{Tan}^{-1}\left(\frac{3\tan\frac{x}{2}+4}{\sqrt{5}}\right)+c$

(B) $\frac{3}{4}\mathrm{Tan}^{-1}\left(\frac{\tan\frac{x}{2}}{3}\right)+c$

(C) $\frac{1}{2-\tan\frac{x}{2}}+c$

(D) $\frac{1}{1+\tan\frac{x}{2}}+c$

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

Q274 TS EAMCET 2023 · 13 May · Shift 1 MCQ

$\int \frac{1}{(x-2)(x^2+1)}\,dx =$

(A) $\log\frac{\sqrt{x^2+1}}{|x-2|}+2\,Tan^{-1}x+c$

(B) $\log\frac{|x-2|}{x^2+1}+2\,Tan^{-1}x+c$

(C) $\frac{1}{5}\left[\log\frac{|x-2|}{\sqrt{7+x^2}}+2\,Tan^{-1}x\right]+c$

(D) $\frac{1}{5}\left[\log\frac{|x-2|}{\sqrt{1+x^2}}-2\,Tan^{-1}x\right]+c$

Answer: (D) $\frac{1}{5}\left[\log\frac{|x-2|}{\sqrt{1+x^2}}-2\,Tan^{-1}x\right]+c$ · The council's preliminary key

Q275 TS EAMCET 2023 · 13 May · Shift 2 MCQ

$$\int \frac{1}{\left(x+\frac{2}{x}\right)\sqrt{x^4+4x^2+3}}\,dx =$$

(A) $\frac{1}{2}\mathrm{Sec}^{-1}\left(x^2+2\right)+c$

(B) $-\mathrm{Cosech}^{-1}\left(x^2+2\right)+c$

(C) $\frac{1}{2}\mathrm{Tan}^{-1}\left(x+\frac{2}{x}\right)+c$

(D) $-\frac{1}{2}\mathrm{Cot}^{-1}\left(x+\frac{2}{x}\right)+c$

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

EdLoop EAPCET

Q276 TS EAMCET 2023 · 13 May · Shift 2 MCQ

If $\frac{3\pi}{2} < x < \frac{5\pi}{2}$ and $\int \left(\sqrt{1-\sin x} + \sqrt{1+\sin x}\right) dx = f(x) + c$ where c is the constant of integration, then $f\left(\frac{\pi}{3}\right) - f(0) =$

(A) 2

(B) -2

(C) $2\sqrt{2}$

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

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

Q277 TS EAMCET 2023 · 13 May · Shift 2 MCQ

If $\int \frac{2\sin 2x - 3\cos x}{2\sin^2 x - 3\sin x + 4} dx = f(x) + c$ where c is the constant of integration, then $f\left(\frac{\pi}{2}\right) - f(0) =$

(A) $2\log 2$

(B) 0

(C) $\log\left(\frac{3}{4}\right)$

(D) 1

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

Q278 TS EAMCET 2023 · 13 May · Shift 2 MCQ

$\int \frac{2x+3}{\sqrt{3x^2-2x+1}} dx =$

(A) $\frac{2}{3}\sqrt{3x^2-2x+1} + \frac{11}{3}\sin h^{-1}\left(\frac{3x-1}{\sqrt{2}}\right) + c$

(B) $\frac{1}{3}\sqrt{3x^2-2x+1} + \frac{11}{3}\sin h^{-1}\left(\frac{\sqrt{3}x-1}{\sqrt{2}}\right) + c$

(C) $\frac{1}{3}\sqrt{3x^2-2x+1} + \frac{11}{3}\sin h^{-1}\left(\frac{3x-1}{\sqrt{3}}\right) + c$

(D) $\frac{2}{3}\sqrt{3x^2-2x+1} + \frac{11}{3\sqrt{3}}\sin h^{-1}\left(\frac{3x-1}{\sqrt{2}}\right) + c$

Answer: (D) $\frac{2}{3}\sqrt{3x^2-2x+1} + \frac{11}{3\sqrt{3}}\sin h^{-1}\left(\frac{3x-1}{\sqrt{2}}\right) + c$ · The council's preliminary key

Q279 TS EAMCET 2023 · 12 May · Shift 1 MCQ

$$\int \frac{\sin^8 x - \cos^8 x}{1 - 2\sin^2 x \cos^2 x} dx =$$

(A) $\frac{1}{2}\cos 2x + c$

(B) $\frac{-1}{2}\cos 2x + c$

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

(D) $\frac{-1}{2}\sin 2x + c$

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

Q280 TS EAMCET 2023 · 12 May · Shift 1 MCQ

If $\int \frac{x^2\left(x\sec^2 x+\tan x\right)}{(x\tan x+1)^2}dx = \frac{-x^2}{x\tan x+1} + f(x) + c$, then $f(x) =$

(A) $\log|x\sin x+\cos x|+c$

(B) $\log|x\cos x+\sin x|+c$

(C) $2\log|x\sin x+\cos x|+c$

(D) $2\log|x\cos x+\sin x|+c$

Answer: (C) $2\log|x\sin x+\cos x|+c$ · The council's preliminary key

Q281 TS EAMCET 2023 · 12 May · Shift 1 MCQ

If $\int \sin(101x)(\sin x)^{99}\,dx = \frac{\sin(100x)(\sin x)^{\lambda}}{\mu} + c$ then $\frac{\lambda}{\mu} =$

(A) 1

(B) 2

(C) 4

(D) 8

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

Q282 TS EAMCET 2023 · 12 May · Shift 1 MCQ

If $\int e^x\left(\sin^2 2x - 8\cos 4x\right)dx = e^x f(x) + c$, then $f\left(\frac{\pi}{4}\right) =$

(A) 0

(B) 1

(C) -1

(D) e

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

Q283 TS EAMCET 2023 · 12 May · Shift 1 MCQ

If n is a positive integer greater than 1 and $I_n = \int \frac{\sin nx}{\sin x}\,dx$, then $I_{n+1} - I_{n-1} =$

(A) $\frac{2}{n-1}\cos(n-1)x$

(B) $\frac{2}{n-1}\sin(n-1)x$

(C) $\frac{2}{n}\cos nx$

(D) $\frac{2}{n}\sin nx$

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

Q284 TS EAMCET 2023 · 12 May · Shift 2 MCQ

Match the following items from List I into List II

List – I	List – II
1. $\int \frac{\sin^2 x}{\cos^4 x} dx$	A. $\frac{\tan^2 x}{2} + \ln\lvert\cos x\rvert + c$
2. $\int \frac{\sin^4 x}{\cos^2 x} dx$	B. $\cos x + \sec x + c$
3. $\int \frac{\sin^3 x}{\cos^2 x} dx$	C. $\frac{\tan^3 x}{3} + c$
4. $\int \frac{\sin^3 x}{\cos^3 x} dx$	D. $\tan x + \frac{\sin 2x}{4} - \frac{3x}{2} + c$
	E. $\cos x - \sec x + c$

Select the correct choice

(A) 1–C, 2–E, 3–B, 4–A

(B) 1–C, 2–D, 3–B, 4–A

(C) 1–D, 2–C, 3–A, 4–B

(D) 1–C, 2–E, 3–A, 4–D

Answer: (B) 1–C, 2–D, 3–B, 4–A · The council's preliminary key

Q285 TS EAMCET 2023 · 12 May · Shift 2 MCQ

If $\int \frac{x}{(a+x)^5}\,dx = \frac{1}{k(a+x)^4}\,(f(x)) + c$ then $\frac{f(-a)}{ak} =$

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

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

(C) $\frac{5}{6}$

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

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

Q286 TS EAMCET 2023 · 12 May · Shift 2 MCQ

$$\int_0^{\pi/4} \frac{\sec x}{1 + 2\sin^2 x}\,dx =$$

(A) $\frac{1}{3}\log(\sqrt{2}+1) + \frac{\pi\sqrt{2}}{12}$

(B) $\frac{2}{3}\log(\sqrt{2}+1) + \frac{\pi\sqrt{2}}{6}$

(C) $\frac{1}{6}\log(\sqrt{2}-1) + \frac{\pi}{12}$

(D) $\frac{1}{4}\log(\sqrt{2}-1) - \frac{\pi\sqrt{3}}{6}$

Answer: (A) $\frac{1}{3}\log(\sqrt{2}+1) + \frac{\pi\sqrt{2}}{12}$ · The council's preliminary key

Q287 TS EAMCET 2023 · 12 May · Shift 2 MCQ

If $\int x^4(\log x)^3 dx = x^5\left[A(\log x)^3 + B(\log x)^2 + C\log x + D\right] + k$, then $A + B + C + 5D =$

(A) $\frac{2}{25}$
(B) $\frac{8}{25}$
(C) $\frac{12}{125}$
(D) $\frac{16}{125}$

Answer: (A) $\frac{2}{25}$ · The council's preliminary key

Q288 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

If $\frac{3\pi}{4} < x < \frac{7\pi}{4}$ then $\int \left(2^x - \sqrt{1+\sin 2x} + \frac{1}{x^2} - \frac{1}{x}\right) dx =$

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

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

Q289 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

If $\tan\alpha = \frac{4}{3}$, then $\int \frac{1}{3\cos x - 4\sin x} dx =$

(A) $\frac{1}{5}\log\left|\tan\left(\frac{x}{2} + \frac{\alpha}{2}\right)\right| + c$
(B) $\frac{1}{5}\log\left|\tan\left(\frac{\pi}{4} + \frac{x}{2} + \frac{\alpha}{2}\right)\right| + c$
(C) $\frac{1}{5}\log\left|\tan\left(\frac{\pi}{4} - \frac{x}{2} - \frac{\alpha}{2}\right)\right| + c$
(D) $\frac{1}{5}\log|\tan(\sec x + \tan x)| + c$

Answer: (B) $\frac{1}{5}\log\left|\tan\left(\frac{\pi}{4} + \frac{x}{2} + \frac{\alpha}{2}\right)\right| + c$ · The council's preliminary key

Q290 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

If $x \neq (2n+1)\frac{\pi}{2}$, then $\int \frac{\cos^3 x}{(1+\sin x)^4} dx =$

EdLoop EAPCET

(A) $-\dfrac{\cos^4 x}{(1+\sin x)^3}+c$

(B) $-\dfrac{\cos^3 x}{(1+\sin x)^3}+c$

(C) $-\dfrac{\cos^4 x}{(1+\sin x)^4}+c$

(D) $-\dfrac{\cos^4 x}{4(1+\sin x)^4}+c$

Answer: (D) $-\dfrac{\cos^4 x}{4(1+\sin x)^4}+c$ · The council's preliminary key

Q291 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

If $f(x)=\int \dfrac{2-3\sin^2 x}{1+\cos 2x}\,dx$ and $f\left(\dfrac{\pi}{4}\right)=1$ then $f(0)=$

(A) $\dfrac{3}{8}(4-\pi)$

(B) $3-\dfrac{\pi}{4}$

(C) 0

(D) 1

Answer: (A) $\dfrac{3}{8}(4-\pi)$ · The council's preliminary key

Q292 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

If $x\neq(2n+1)\dfrac{\pi}{2}$, $n\in\mathbb{Z}$ and $\cos x\neq\dfrac{-1}{2}$ then $\int\left(\dfrac{\sin x+\sin 2x}{1+\cos x+\cos 2x}\right)^2 dx=$

(A) $\dfrac{\tan^3 x}{3}-x+c$

(B) $\dfrac{\sec^3 x}{3}-x+c$

(C) $\cot x-x+c$

(D) $\tan x-x+c$

Answer: (D) $\tan x-x+c$ · The council's preliminary key

Q293 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

Given that $\int \dfrac{1}{x^2+a^2}dx=\dfrac{1}{a}\mathrm{Tan}^{-1}\left(\dfrac{x}{a}\right)+c.$

If $\int \dfrac{1}{x^4+3x^2+1}dx=a.\mathrm{Tan}^{-1}\left(\dfrac{b(x^2-1)}{x}\right)+c\,\mathrm{Tan}^{-1}\left(\dfrac{d(x^2+1)}{x}\right)+k$ where k is a constant of integration, then $5(c+d+ab)=$

(A) 3
(B) 5
(C) 8
(D) 10

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

Q294 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

Given that $\frac{d}{dx}(\mathrm{Tan}^{-1}x) = \frac{1}{1+x^2}$ and $\frac{d}{dx}(\mathrm{Sinh}^{-1}x) = \frac{1}{\sqrt{1+x^2}}$. Then $\int \frac{3x^6 - 2x^4 + x^2 - 2}{x^2+1}\,dx =$

(A) $\frac{3}{7}x^7 - \frac{2}{5}x^5 + \frac{1}{3}x^3 - 2x + c$
(B) $\frac{\frac{3}{7}x^7 - \frac{2}{5}x^5 + \frac{1}{3}x^3 - 2x}{\frac{x^3}{3} + x} + c$
(C) $\frac{3}{5}x^5 - \frac{5}{3}x^3 + 6x - 8\,\mathrm{Tan}^{-1}x + c$
(D) $\frac{3}{5}x^5 - \frac{5}{3}x^3 + 6x - 8\,\mathrm{Sinh}^{-1}x + c$

Answer: (C) $\frac{3}{5}x^5 - \frac{5}{3}x^3 + 6x - 8\,\mathrm{Tan}^{-1}x + c$ · The council's preliminary key

Q295 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

$\int \frac{\sin x \sec^2 x - \tan x \sin x + \cos x}{(1 - \cos 2x)}\,dx =$

(A) $\frac{1}{2}\left[\sec x - \mathrm{cosec}\, x - \log\left|\tan\left(\frac{x}{2}\right)\tan\left(\frac{\pi}{4} + \frac{x}{2}\right)\right|\right] + c$
(B) $\sec x - \mathrm{cosec}\, x + \log\left|\frac{\tan\left(\frac{x}{2}\right)}{\tan\left(\frac{\pi}{4} + \frac{x}{2}\right)}\right| + c$
(C) $\frac{1}{2}\left[\sec x - \mathrm{cosec}\, x - \log\left|\frac{\tan\left(\frac{\pi}{4} + \frac{x}{2}\right)}{\tan\left(\frac{x}{2}\right)}\right|\right] + c$
(D) $\sec x + \mathrm{cosec}\, x - \log\left|\tan\left(\frac{x}{2}\right)\right| + c$

Answer: (C) $\frac{1}{2}\left[\sec x - \mathrm{cosec}\, x - \log\left|\frac{\tan\left(\frac{\pi}{4} + \frac{x}{2}\right)}{\tan\left(\frac{x}{2}\right)}\right|\right] + c$ · The council's preliminary key

Q296 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

If $f(x) = \int \frac{16x^7 + 5x^{10}}{(x^3 + 2 + 3x^8)^2}\,dx$ $(x \geq 0)$ and $f(0) = 1$, then the value of $f(-1)$ is

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

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

Q297 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

Let $g(x)$ be the anti-derivative of $f(x)$. Then the function for which $\log_e\left(1+(g(x))^2\right)+c$ is an antiderivative is

(A) $\left(1+(g(x))^2\right) g'(x) f(x)$
(B) $\frac{-2f(x)g(x)}{1+g(x)}$
(C) $\frac{2f(x)g(x)}{1+(g(x))^2}$
(D) $\frac{2g(x)}{1+(g(x))^2}$

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

Q298 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

If $f(x)=\int\left[\tan^2 x+\cot^2 x+\frac{4(\sin^3 x+\cos^3 x)}{\sin^2 2x}\right]dx$ and $f\left(\frac{\pi}{4}\right)=0$, then $3\left[f\left(\frac{\pi}{6}\right)+2\right]=$

(A) $\frac{\pi}{2}$
(B) $\frac{\pi}{4}$
(C) 0
(D) $\frac{-\pi}{2}$

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

Q299 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

$\int\sqrt{4\cos^2 x-5\sin^2 x}\,\cos x\,dx=$

(A) $\frac{1}{2}\sin x\sqrt{4-9\sin^2 x}+\frac{2}{3}\sin^{-1}\left(\frac{3\sin x}{2}\right)+c$
(B) $\frac{1}{2}\cos x\sqrt{4-9\cos^2 x}+\frac{2}{3}\sin^{-1}\left(\frac{3\cos x}{2}\right)+c$
(C) $\frac{1}{2}\sin x\sqrt{4-9\sin^2 x}+\frac{2}{3}\cos^{-1}\left(\frac{3\cos x}{2}\right)+c$
(D) $\frac{1}{2}\cos x\sqrt{4-9\sin^2 x}+\frac{2}{3}\sin^{-1}\left(\frac{3\sin x}{2}\right)+c$

Answer: (A) $\frac{1}{2}\sin x\sqrt{4-9\sin^2 x}+\frac{2}{3}\sin^{-1}\left(\frac{3\sin x}{2}\right)+c$ · The council's preliminary key

Q300 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

Let $f(x)=\int\frac{2x^3-3x^2+4x-5}{x^2}dx$ and $f(1)=1$. Then $f(5)=$

(A) $10 + 4\log 5$

(B) $10 - 4\log 5$

(C) $9 + 4\log 5$

(D) $9 - 4\log 5$

Answer: (C) $9 + 4\log 5$ · The council's preliminary key

Q301 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

If $x > 0$ and $x \neq (2n+1)\frac{\pi}{2}$ then $\int \left(x\sqrt{x} - e^{\log(\sec x \tan x)} + \frac{3x^2 - 2x + 1}{x^2} \right) dx =$

(A) $x\sqrt{x} - \sec x + 3x - 2\log x - \frac{1}{x} + c$

(B) $\frac{2}{5}x^2\sqrt{x} - \sec x + 3x + \frac{2}{x^2} - \frac{1}{x} + c$

(C) $x\sqrt{x} - \sec x + 3x + \frac{2}{x^2} - \frac{1}{x} + c$

(D) $\frac{2}{5}x^2\sqrt{x} - \sec x + 3x - 2\log x - \frac{1}{x} + c$

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

Q302 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

$\int (2x - 3)\sqrt{3x + 2}\, dx =$

(A) $\frac{2}{135}(54x^2 - 123x + 106)\sqrt{3x + 2} + c$

(B) $\frac{2}{135}(54x^2 + 123x - 106)\sqrt{3x + 2} + c$

(C) $\frac{2}{135}(54x^2 - 123x - 106)\sqrt{3x + 2} + c$

(D) $\frac{2}{135}(54x^2 - 195x - 106)\sqrt{3x + 2} + c$

Answer: (C) $\frac{2}{135}(54x^2 - 123x - 106)\sqrt{3x + 2} + c$ · The council's preliminary key

Q303 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

If $\int \frac{x+3}{(x-1)^2(2x-1)}dx = \frac{A}{x-1} + B\log(2x-1) + C\log(x-1) + K$ then $A + B + C =$

(A) 3

(B) 11

(C) -4

(D) -11

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

Q304 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

If $\int \frac{1+\cos 8x}{\tan 2x - \cot 2x}dx = f(x).\cos(g(x)) + c$, then $f\left(\frac{1}{4}\right) + g\left(\frac{1}{4}\right) =$

(A) 2
(B) $\frac{17}{8}$
(C) $\frac{15}{8}$
(D) $\frac{33}{16}$

Answer: (D) $\frac{33}{16}$ · The council's preliminary key

Q305 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

Let $x \neq \frac{-3}{5}, \frac{2}{5}$, if $f\left(\frac{2x+1}{5x+3}\right) = x + 2$, then $\int f(x)\,dx =$

(A) $\frac{7}{5}x - \frac{1}{5}\log|5x+3| + c$
(B) $\frac{7}{5}x - \frac{1}{25}\log|5x+3| + c$
(C) $\frac{7}{5}x - \frac{1}{25}\log|5x-2| + c$
(D) $\frac{7}{5}x - \frac{1}{5}\log|5x-2| + c$

Answer: (C) $\frac{7}{5}x - \frac{1}{25}\log|5x-2| + c$ · The council's preliminary key

Q306 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

If $\int e^x \cos x\,dx = \frac{e^x}{2}(\cos x + \sin x)$ and $\int \frac{\cos\left(\log\left(\frac{2x+3}{3-2x}\right)\right)}{(3-2x)^2}dx = \frac{f(x)}{24}\left[\cos(g(x)) + \sin(g(x))\right] + c$ then $g(1) =$

(A) 5
(B) $\log f(2)$
(C) $\log f(1)$
(D) 0

Answer: (C) $\log f(1)$ · The council's preliminary key

Q307 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

$\int \tan^{-1}(1 - x + x^2)\,dx + \int \tan^{-1}(x)\,dx + \int \tan^{-1}(1-x)\,dx =$

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

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

Q308 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

$0 < x < 1$, $\int \frac{dx}{\sqrt{x^2 - x^5}} = \frac{1}{3}\log|f(x)| + C$, then $f\left(\frac{1}{2}\right) =$

EdLoop EAPCET

(A) $\frac{\sqrt{8}-\sqrt{7}}{\sqrt{8}+\sqrt{7}}$
(B) $\frac{\sqrt{8}+\sqrt{7}}{\sqrt{8}-\sqrt{7}}$
(C) $2(\sqrt{8}-\sqrt{7})$
(D) $2(\sqrt{8}-\sqrt{7})^2$

Answer: (A) $\frac{\sqrt{8}-\sqrt{7}}{\sqrt{8}+\sqrt{7}}$ · The council's preliminary key

Q309 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

$\int \frac{dx}{\sin\left(x-\frac{\pi}{3}\right)\cos x} =$

(A) $2\log\left(\frac{\tan x-\sqrt{3}}{2}\right)+C$
(B) $2\log\left(\sin\left(x-\frac{\pi}{3}\right)\cos x\right)+C$
(C) $2\log\left(\tan x+\sqrt{3}\right)+C$
(D) $2\log\left(\sin x+\sqrt{3}\cos x\right)+C$

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

Q310 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

$\int(1+x)\log(1+x^2)\,dx=\left(x+\frac{x^2}{2}+\frac{1}{2}\right)\log(1+x^2)+g(x)+C$, then $g(x)=$

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

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

Q311 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

$\int\frac{3e^x-7e^{-x}}{7e^x+3e^{-x}}\,dx=Kx+L\log\left|e^{-2x}+\frac{7}{3}\right|+C$, then $K+L=$

(A) $\frac{-3}{38}$
(B) $\frac{21}{38}$
(C) $\frac{38}{21}$
(D) $\frac{-38}{3}$

Answer: (C) $\frac{38}{21}$ · The council's preliminary key

Q312 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

$\int\left(\sqrt{x+\sqrt{12x-36}}+\sqrt{x-\sqrt{12x-36}}\right)dx=$

(A) $2\sqrt{3}\,x + C,\ \forall x.$

(B) $\dfrac{4(x-3)^{3/2}}{3} + C,\ \forall x$

(C) $\begin{cases} \dfrac{4}{3}(x-3)^{3/2} + C, & \text{if } x > 6 \\ 2\sqrt{3}\,x + C & \text{if } 3 \le x \le 6 \end{cases}$

(D) $\begin{cases} \dfrac{4}{3}(x-3)^{3/2} + C, & \text{if } 3 \le x \le 6 \\ 2\sqrt{3}\,x + C & \text{if } x > 6 \end{cases}$

Answer: (C) $\begin{cases} \dfrac{4}{3}(x-3)^{3/2} + C, & \text{if } x > 6 \\ 2\sqrt{3}\,x + C & \text{if } 3 \le x \le 6 \end{cases}$ · The council's preliminary key

Q313 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

$$\int \frac{x\,dx}{\sqrt[15]{(1+x^2)^{12}(2+x^2)^{18}}} = \alpha\left(\frac{1+x^2}{2+x^2}\right)^{1/n} + C \Rightarrow \frac{n}{\alpha} =$$

(A) 6

(B) 4

(C) 2

(D) 8

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

Q314 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

$$\int (\log x)^2\, x^3\, dx = \frac{x^4}{32} f(x) + C \Rightarrow f(x) =$$

(A) $8(\log x)^2 - 4\log x + 1$

(B) $8\log x - 4x^4 + x^3$

(C) $8(\log x)^2 + 4x - x^2$

(D) $4(\log x)^2 - 4x^2 + x + 1$

Answer: (A) $8(\log x)^2 - 4\log x + 1$ · The council's preliminary key

Q315 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

If $f(x)$ is anti derivative of $g(x)$ and $\int f(x)g(x)(1+f^2(x))\,dx = F(x)$, then $F(x) =$

EdLoop EAPCET

(A) $\frac{(1+f^2(x))^2}{4}+C$

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

(C) $\frac{f^2(x)g(x)}{4}+C$

(D) $\frac{g^2(x)f(x)}{4}+C$

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

Q316 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

$k \in N, \int \frac{1-k\cos^2 x}{\sin^k x \cdot \cos^2 x}\,dx =$

(A) $\frac{\tan x}{\sin^{k+1} x}+C$

(B) $\frac{\tan x}{\sin^k x}+C$

(C) $\sin^k x \sec^2 x + C$

(D) $k\sin^{k-1} x \cos x + C$

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

Q317 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

$\int \frac{\operatorname{cosec}^2 x - 2022}{\cos^{2022} x}\,dx = f(x)+C \Rightarrow f\left(\frac{\pi}{4}\right) =$

(A) $\left(\frac{1}{2}\right)^{1011}$

(B) -2^{1011}

(C) 2^{2011}

(D) -2^{2022}

Answer: (B) -2^{1011} · The council's preliminary key

Q318 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

$\int \cos^{-1}\left(\sqrt{\frac{x}{a+x}}\right)dx = f(x)+C \Rightarrow f'(a) =$

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

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

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

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

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

Q319 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

$\int \frac{dx}{(1+\sqrt{x})^{2022}} =$

(A) $\frac{2}{(1+\sqrt{x})^{2021}}\left[\frac{1}{2021}-\frac{1+\sqrt{x}}{2020}\right]+C$

(B) $\frac{2}{(1+\sqrt{x})^{2022}}\left[\frac{1+\sqrt{x}}{2020}-\frac{\sqrt{x}}{2021}\right]+C$

(C) $\frac{2}{(1+\sqrt{x})}\left[\frac{(1+\sqrt{x})^{2022}}{2022}-\frac{(1+\sqrt{x})^{2021}}{2021}\right]+C$

(D) $\frac{1}{(1+\sqrt{x})^{2}}\left[\frac{1}{(1+\sqrt{x})^{1010}}-\frac{1}{(1+\sqrt{x})^{1011}}\right]+C$

Answer: (A) $\frac{2}{(1+\sqrt{x})^{2021}}\left[\frac{1}{2021}-\frac{1+\sqrt{x}}{2020}\right]+C$ · The council's preliminary key

Q320 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

$\int \frac{x^8+4}{x^4-2x^2+2}\,dx = Ax^5+Bx^3+Cx+K$, then $5A+3B+C =$

(A) 7

(B) 5

(C) 3

(D) 1

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

Q321 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

$\int \sqrt{x+\sqrt{x^2+2}}\,dx =$

(A) $\frac{3}{2}\left(x+\sqrt{x+2}\right)^{3/2}-2\left(x+\sqrt{x^2+2}\right)^{1/4}+C$

(B) $\frac{1}{3}\left(x+\sqrt{x^2+2}\right)^{3/2}-2\left(x+\sqrt{x^2+2}\right)^{1/4}+C$

(C) $\left(x+\sqrt{x^2+2}\right)^{-3/2}-2\left(x+\sqrt{x^2+2}\right)^{-1/2}+C$

(D) $\frac{\left(x+\sqrt{x^2+2}\right)^2-6}{3\sqrt{x+\sqrt{x^2+2}}}+C$

Answer: (D) $\frac{\left(x+\sqrt{x^2+2}\right)^2-6}{3\sqrt{x+\sqrt{x^2+2}}}+C$ · The council's preliminary key

Q322 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

If $\int \frac{\sin\left(x-\frac{\pi}{4}\right)}{2+\sin 2x}\,dx = -\frac{1}{\sqrt{2}}\tan^{-1}(f(x))+C$, then $f(x) =$

(A) $\sin x-\cos x$

(B) $\sqrt{2}\cos\left(x-\frac{\pi}{4}\right)$

(C) $\sin\left(x-\frac{\pi}{4}\right)$

(D) $\sqrt{2}\tan\left(x-\frac{\pi}{4}\right)$

Answer: (B) $\sqrt{2}\cos\left(x-\frac{\pi}{4}\right)$ · The council's preliminary key

Q323 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

If $\frac{d}{dx}\left(A\log\left(\frac{\sqrt{1-x^3}+B}{\sqrt{1-x^3}+1}\right)\right)=\frac{1}{x\sqrt{1-x^3}}$, then $AB=$

(A) $1/3$

(B) $-1/3$

(C) $-2/3$

(D) $2/3$

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

Q324 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

If $\int e^x(f(x)-f'(x))=g(x)+C$, then $\int e^x f'(x)\,dx=$

(A) $\frac{1}{2}\left[e^x f(x)-g(x)\right]+C$

(B) $\frac{1}{2}\left[e^x f(x)+g(x)\right]+C$

(C) $\frac{e^x f'(x)+g(x)}{2}+C$

(D) $\frac{1}{2}\left[e^x f(x)+e^x g(x)\right]+C$

Answer: (A) $\frac{1}{2}\left[e^x f(x)-g(x)\right]+C$ · The council's preliminary key

Q325 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

If $\int \frac{\sin^3 x\left(\tan^{-1}(\sec x+\cos x)\right)^{-1}}{(\cos^4 x+3\cos^2 x+1)}\,dx=f(x)+C$, then $e^{f(x)}=$

(A) $\tan^{-1}(\sec x+\cos x)$

(B) $\tan(\sec x+\cos x)$

(C) $\frac{1}{\cos^4 x+3\cos^2 x+1}$

(D) $\frac{\sin x}{\sin^3 x+\cos^4 x+1}$

Answer: (A) $\tan^{-1}(\sec x+\cos x)$ · The council's preliminary key

Q326 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

$\int \frac{1}{\left(\sin x+\cos x+\sqrt{2}\sqrt{\sin 2x}\right)^2}\,dx=$

(A) $\frac{-(1+3\sqrt{\tan x})}{(3+\tan^2 x)^3}+C$

(B) $\frac{-(1+3\sqrt{\tan x})}{3(1+\sqrt{\tan x})^3}+C$

(C) $\frac{-(1+\sqrt{\tan x})}{3(1+3\sqrt{\tan x})^2}+C$

(D) $\frac{1}{(1+3\sqrt{\tan x})^3}+C$

Answer: (B) $\frac{-(1+3\sqrt{\tan x})}{3(1+\sqrt{\tan x})^3}+C$ · The council's preliminary key

Q327 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

If $\int \frac{dx}{x^{2022}(1+x^{2022})^{1/2022}}=\frac{-(1+x^m)^{n/m}}{nx^n}+C$, then $m-n=$

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

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

Q328 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

$$\int \sqrt{1+2\cot x(\cot x+\operatorname{cosec} x)}\,dx =$$

(A) $2\log\left|\sin\frac{x}{2}\right|+C$
(B) $2\log(\sin x)-\log(\operatorname{cosec} x+\cot x)+C$
(C) $\frac{1}{2}\log\left|\operatorname{cosec}\frac{x}{2}+\cot\frac{x}{2}\right|+C$
(D) $4\log\cos\frac{x}{2}+C$

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

Q329 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

$$\int \frac{\cos^4 x}{(\sin^2 x+\sin^{-3}x\cos^5 x)^3}\,dx =$$

(A) $\frac{1}{5}(1+\cot^5 x)^{-2}+C$
(B) $\frac{1}{10}(1+\cot^2 x)^{-5}+C$
(C) $\frac{1}{10}(1+\cot^5 x)^{-2}+C$
(D) $\frac{1}{5}(1+\cot^5 x)^{-5}+C$

Answer: (C) $\frac{1}{10}(1+\cot^5 x)^{-2}+C$ · The council's preliminary key

Q330 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

$$\left(\int \frac{2\cos x+1}{(2+\cos x)^2}dx\right)-\frac{\sin x}{2+\cos x} =$$

(A) $\frac{1}{2+\cos x}+C$
(B) $\sin x+C$
(C) $\frac{2}{2+\cos x}+C$
(D) C

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

Q331 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

$\int \frac{1}{\cos 4x \cos 2x} dx = \frac{1}{2\sqrt{2}} \log\left(\frac{1+f(x)}{1-f(x)}\right) - \frac{1}{2}\log g(x) + C$, then $g\left(\frac{\pi}{6}\right) - \sqrt{2} f\left(\frac{\pi}{6}\right)$

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

(B) $\pi + 3$

(C) 2

(D) 1

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

Q332 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

Assertion (A): $\int_2^e \left(\frac{1}{\log_e x} - \frac{1}{(\log_e x)^2}\right) dx = e - 2\log_2 e$

Reason (R): $\int_a^b e^x (f(x) + f'(x)) dx = e^b f(b) - e^a f(a)$

(A) (A) and (R) are true, (R) is the correct explanation to (A).

(B) (A) and (R) are false, (R) is not the correct explanation to (A).

(C) (A) is true and (R) is false, R is not the correct explanation to (A).

(D) (A) is false and (R) is true, R is not the correct explanation to (A).

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

Q333 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

$\int \frac{3x+4}{x^3-2x-4} dx = \log f(x) + C \Rightarrow f(3) =$

(A) $\frac{1}{\sqrt{17}}$

(B) $\frac{1}{17}$

(C) $\frac{2}{15}$

(D) $\frac{2}{17}$

Answer: (A) $\frac{1}{\sqrt{17}}$ · The council's preliminary key

Q334 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

$\int \frac{e^{\tan^{-1} x}}{1+x^2} \left[\left(\sec^{-1}\sqrt{1+x^2}\right)^2 + \cos^{-1}\left(\frac{1-x^2}{1+x^2}\right)\right] dx =$

(A) $e^{\tan^{-1} x}\left(\tan^{-1} x\right)^2 + C$

(B) $e^{\tan^{-1} x}\left(\sec^{-1} x\right)^2 + C$

(C) $e^{\tan^{-1} x}\left(\sec^{-1}\left(\sqrt{1+x^2}\right)\right) + C$

(D) $e^{\tan^{-1} x}\left(\cos^{-1}\left(\frac{1-x^2}{1+x^2}\right)\right) + C$

Answer: (A) $e^{\tan^{-1} x}\left(\tan^{-1} x\right)^2 + C$ · The council's preliminary key

EdLoop EAPCET

Q335 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

$\int \frac{dx}{(x-3)^{4/5}(x+1)^{6/5}} =$

(A) $\frac{5}{4}\sqrt[5]{\frac{x-3}{x+1}} + C$

(B) $\frac{5}{4}\left(\frac{x+1}{x-3}\right)^{1/5} + C$

(C) $\frac{1}{5}\left(\frac{x-3}{x+1}\right)^{1/5} + C$

(D) $\frac{5}{4}\left(\frac{x-3}{x+4}\right)^{4/5} + C$

Answer: (A) $\frac{5}{4}\sqrt[5]{\frac{x-3}{x+1}} + C$ · The council's preliminary key

Q336 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

If $I_n = \int (\cos^n x + \sin^n x)\, dx$, and $I_n - \frac{n-1}{n} I_{n-2} = \frac{\sin x \cos x}{n} f(x)$, then $f(x) =$

(A) $\cos^{n-2} x + \sin^{n-2} x$

(B) $\cos^{n-2} x - \sin^{n-2} x$

(C) $\frac{\cos^{n-2} x - \sin^{n-2} x}{n}$

(D) $\frac{\cos^{n-2} x + \sin^{n-2} x}{n}$

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

Q337 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

There exist θ such that $a > |\sec\theta|$, then $\int \frac{dx}{1+a\cos x} =$

(A) $\frac{1}{\sqrt{a^2-1}} \tan^{-1}\left(\frac{\sqrt{a-1}}{\sqrt{a+1}} \tan\frac{x}{2}\right) + C$

(B) $\frac{1}{\sqrt{a^2-1}} \tan^{-1}\left(\sqrt{\frac{1-a}{1+a}} \tan\frac{x}{2}\right) + C$

(C) $\frac{1}{\sqrt{a^2-1}} \log\left(\frac{\sqrt{a+1}\cos\frac{x}{2} - \sqrt{a-1}\sin\frac{x}{2}}{\sqrt{a-1}\cos\frac{x}{2} + \sqrt{a-1}\sin\frac{x}{2}}\right) + C$

(D) $\frac{1}{\sqrt{a^2-1}} \log\left(\frac{\sqrt{a+1}\cos\frac{x}{2} + \sqrt{a-1}\sin\frac{x}{2}}{\sqrt{a+1}\cos\frac{x}{2} - \sqrt{a-1}\sin\frac{x}{2}}\right) + C$

Answer: (D) $\frac{1}{\sqrt{a^2-1}} \log\left(\frac{\sqrt{a+1}\cos\frac{x}{2} + \sqrt{a-1}\sin\frac{x}{2}}{\sqrt{a+1}\cos\frac{x}{2} - \sqrt{a-1}\sin\frac{x}{2}}\right) + C$ · The council's preliminary key

Q338 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

$\int \frac{x^2-2}{x^3\sqrt{x^2-1}} dx =$

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

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

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

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

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

EdLoop EAPCET

Q339 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

Let $f(x)=\int \frac{e^{3x}}{4+8e^{2x}+e^{4x}}dx$ and $g(x)=\int \frac{2dx}{e^{3x}+8e^{x}+4e^{-x}}dx$, then $f(x)-g(x)=$

(A) $\frac{1}{2}\tan^{-1}\left(\frac{e^{x}+2e^{-x}}{2}\right)+C$

(B) $\frac{1}{2}\tan^{-1}\left(\frac{e^{x}+e^{-x}}{2}\right)+C$

(C) $\frac{1}{2}\tan^{-1}\left(\frac{2e^{-x}+e^{-2x}}{2}\right)+C$

(D) $\frac{1}{2}\tan^{-1}\left(\frac{e^{2x}+2e^{x}}{2e^{-x}}\right)+C$

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

Q340 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

If $a,b,c,d\neq 0$ and $f\left(\frac{at+b}{ct+d}\right)=t$, then $\int f(x)dx=$

(A) $\frac{-d}{c}x+\frac{bc-ad}{c^2}\log(cx-a)+K$

(B) $\frac{-d}{c}x+\frac{bc-ad}{c^2}\log(cx+d)+K$

(C) $\frac{a}{c}x+\frac{ad-bc}{c^2}\log(cx+a)+K$

(D) $\frac{a}{c}x-\frac{ad-bc}{c}\log(cx+a)+K$

Answer: (A) $\frac{-d}{c}x+\frac{bc-ad}{c^2}\log(cx-a)+K$ · The council's preliminary key

Q341 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

Assertion (A) : if $I_n=\int \cot^n x\,dx$, then $I_6+I_4=\dfrac{-\cot^5 x}{5}$

Reason (R) : $\int \cot^n x\,dx=\dfrac{-\cot^{n-1}x}{n}-\int \cot^{n-2}x\,dx$

(A) A is false, R is false

(B) A is true, R is true

(C) A is true, R is false

(D) A is false, R is true

Answer: (C) A is true, R is false · The council's preliminary key

Q342 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

If $I_n=\int \tan^n x\,dx$, and $I_0+I_1+2I_2+2I_3+2I_4+I_5+I_6=\sum_{K=1}^{n}\dfrac{\tan^K x}{K}$, then n =

(A) 6

(B) 5

(C) 4

(D) 3

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

Q343 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

$\int \frac{e^{\cot x}}{\sin^2 x}(2\log \operatorname{cosec} x + \sin 2x)\, dx =$

(A) $-2e^{\cot x}\log\left(\operatorname{cosec}^2 x\right) + C$

(B) $-2e^{\cot x}\log(\operatorname{cosec} x) + C$

(C) $-2e^{\cot x}\log(\operatorname{cosec} x + \sin x) + C$

(D) $-2e^{\cot x}\log(\operatorname{cosec} x - \cot x) + C$

Answer: (B) $-2e^{\cot x}\log(\operatorname{cosec} x) + C$ · The council's preliminary key

Q344 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

The parametric form of a curve is $x = \frac{t^3}{t^2-1}$, $y = \frac{t}{t^2-1}$, then $\int \frac{dx}{x-3y} =$

(A) $\frac{1}{2}\log(t^2-1) + C$

(B) $2\log\left(t(t^2-1)\right) + C$

(C) $\frac{1}{4}\log\left(\frac{t}{t^2-3}\right) + C$

(D) $\frac{5}{2}\log\left(t + \frac{1}{t^2}\right) + C$

Answer: (A) $\frac{1}{2}\log(t^2-1) + C$ · The council's preliminary key

Q345 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

If $f(x) = \int x^2\cos^2 x\left(2x\tan^2 x - 2x - 6\tan x\right)dx$ and $f(0) = \pi$ then $f(x) =$

(A) $x^2\sin x + \pi$

(B) $\cos x + \pi - 1$

(C) $-x^3\sin 2x + \pi$

(D) $x^3\cos 2x + \pi\cos x$

Answer: (C) $-x^3\sin 2x + \pi$ · The council's preliminary key

Q346 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

If $\int \frac{e^{\sqrt{x}}}{\sqrt{x}}(x + \sqrt{x})\, dx = e^{\sqrt{x}}\left[Ax + B\sqrt{x} + C\right] + K$, then A + B + C =

(A) -2

(B) 2

(C) 4

(D) -4

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

Q347 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

If $\int \frac{1+\sqrt{\tan x}}{\sin 2x}dx = A\log\tan x + B\tan x + C$ then 4A - 2B =

(A) -1

(B) 2

(C) 1

(D) -2

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

Q348 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

$\int \frac{1+\tan x\tan(x+a)}{\tan x\tan(x+a)}dx =$

(A) $\tan\alpha\,(\log(\sec(x+a)) + \log\sec x + C)$

(B) $\cot\alpha\,(\log|\sin x| - \log|\sin(x+\alpha)|) + C$

(C) $\tan\alpha\left|\log\left(\frac{\cos x}{\sin(x+\alpha)}\right)\right| + C$

(D) $\cot\alpha\left(\log\frac{\sin(x+a)}{\cos(x+\alpha)}\right) + C$

Answer: (B) $\cot\alpha\,(\log|\sin x| - \log|\sin(x+\alpha)|) + C$ · The council's preliminary key

Q349 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

$\int \frac{\sin x}{\sin 3x}\,dx =$

(A) $\frac{1}{2\sqrt{3}}\log\left|\frac{\sqrt{3}+\tan x}{\sqrt{3}-\tan x}\right| + c$

(B) $\frac{1}{2\sqrt{3}}\log\left|\frac{\sqrt{3}-\tan x}{\sqrt{3}+\tan x}\right| + c$

(C) $\frac{1}{4\sqrt{3}}\log\left|\frac{\sqrt{3}+\tan x}{\sqrt{3}-\tan x}\right| + c$

(D) $\frac{1}{4\sqrt{3}}\log\left|\frac{\sqrt{3}-\tan x}{\sqrt{3}+\tan x}\right| + c$

Answer: (A) $\frac{1}{2\sqrt{3}}\log\left|\frac{\sqrt{3}+\tan x}{\sqrt{3}-\tan x}\right| + c$ · The council's preliminary key

Q350 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

$\int \frac{dx}{x(4+x^2)} =$

EdLoop EAPCET

(A) $\frac{1}{4}\log\left(\frac{x^2}{4+x^2}\right)+c$

(B) $\frac{1}{2}\log\left(\frac{x^2}{4+x^2}\right)+c$

(C) $\frac{1}{8}\log\left(\frac{4+x^2}{x^2}\right)+c$

(D) $\frac{1}{8}\log\left(\frac{x^2}{4+x^2}\right)+c$

Answer: (D) $\frac{1}{8}\log\left(\frac{x^2}{4+x^2}\right)+c$ · The council's preliminary key

Q351 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

$$\int \frac{x^4-1}{x^2(x^4+x^2+1)^{1/2}}\,dx =$$

(A) $\sqrt{\frac{x^4+x^2+1}{x}}+c$

(B) $\frac{x^2}{\sqrt{x^4+x^2+1}}+c$

(C) $\frac{\sqrt{x^4+x^2+1}}{x}+c$

(D) $\sqrt{x^4+x^2+1}+c$

Answer: (C) $\frac{\sqrt{x^4+x^2+1}}{x}+c$ · The council's preliminary key

Q352 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

$$\int \frac{dx}{x(x^5+3)} =$$

(A) $\frac{1}{3}\log|x^5+3|+c$

(B) $\frac{1}{15}\log\left|\frac{x^5}{x^5+3}\right|+c$

(C) $\frac{1}{5}\log\left|\frac{x^5}{x^5+3}\right|+c$

(D) $\frac{1}{5}\log|x^5+3|+c$

Answer: (B) $\frac{1}{15}\log\left|\frac{x^5}{x^5+3}\right|+c$ · The council's preliminary key

Q353 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

$$\int \frac{dx}{(\sin x)(\cos x)} =$$

(A) $\log|\sin x|+c$

(B) $\log|\cos x|+c$

(C) $\log|\tan x|+c$

(D) $\log|\operatorname{cosec} x|+c$

Answer: (C) $\log|\tan x|+c$ · The council's preliminary key

EdLoop EAPCET

Q354 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

If $\int \frac{5\tan(x)}{\tan(x)-2}\,dx = x + a\log|\sin(x)-2\cos(x)| + k$, then $a =$ _____

(A) -1

(B) -2

(C) 1

(D) 2

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

Q355 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

If $\int \frac{2x+3}{x(x+1)(x+2)(x+3)+1}\,dx = \frac{-1}{ax^2+bx+c} + \alpha$, then value of $a+b+c =$

(A) 3

(B) 4

(C) 5

(D) 6

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

Q356 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

If $\int \frac{2\cos x + 3\sin x}{4\cos x + 5\sin x}\,dx = \left(\frac{23}{41}\right)x + k\log|4\cos x + 5\sin x| + c$, then $k =$ _____

(A) $\frac{2}{41}$

(B) $\frac{-2}{41}$

(C) $\frac{3}{41}$

(D) $\frac{-3}{41}$

Answer: (B) $\frac{-2}{41}$ · The council's preliminary key

Q357 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

$\int \cos\sqrt{x}\,dx =$

(A) $2\sqrt{x}\sin\sqrt{x} + 2\cos\sqrt{x} + c$

(B) $2\sqrt{x}\sin\sqrt{x} + 2\sin\sqrt{x} + c$

(C) $2\sqrt{x}\sin\sqrt{x} - 2\cos\sqrt{x} + c$

(D) $\sqrt{x}\cos\sqrt{x} - 2\sin\sqrt{x} + c$

Answer: (A) $2\sqrt{x}\sin\sqrt{x} + 2\cos\sqrt{x} + c$ · The council's preliminary key

EdLoop EAPCET

Q358 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

If $\int \frac{x^2+1}{x^4+1}\,dx = f(x) + c$, then $f(x) =$ _____

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

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

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

(D) $\frac{1}{\sqrt{2}}\text{Tan}^{-1}\left(\frac{1+x^4}{\sqrt{2}x}\right)$

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

Q359 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

If $\int \frac{1+\cos(4x)}{\cot(x)-\tan(x)}\,dx = A\cos(4x) + B$, then $A =$ _____

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

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

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

(D) $\frac{-1}{8}$

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

Q360 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

$\int \frac{dx}{\sqrt{7-6x-x^2}} =$

(A) $\text{Sinh}^{-1}\left(\frac{x+3}{4}\right) + c$

(B) $\log\left|\frac{x+3}{4}\right| + c$

(C) $\text{Sin}^{-1}\left(\frac{x+3}{4}\right) + c$

(D) $\frac{1}{2}\text{Sin}^{-1}\left(\frac{x+3}{4}\right) + c$

Answer: (C) $\text{Sin}^{-1}\left(\frac{x+3}{4}\right) + c$ · The council's preliminary key

Q361 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

$\int_0^1 \frac{xe^x}{(x+1)^2}\,dx =$

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

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

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

(D) $2e$

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

Q362 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

$\int \frac{x^3 - x^2 + x - 1}{x - 1}\,dx =$

(A) $\frac{x^3}{3} - x + c$

(B) $\frac{x^2}{3} + x + c$

(C) $\frac{x^3}{3} + x + c$

(D) $2x + c$

Answer: (C) $\frac{x^3}{3} + x + c$ · The council's preliminary key

Q363 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

The value of $\int \frac{e^{\mathrm{Tan}^{-1}(x)}}{1+x^2}\left[\left(\mathrm{Sec}^{-1}\sqrt{1+x^2}\right)^2 + \mathrm{Cos}^{-1}\left(\frac{1-x^2}{1+x^2}\right)\right]dx$, for $x > 0$ is _____

(A) $e^{\mathrm{Tan}^{-1}(x)}\left(\mathrm{Tan}^{-1}x\right)^2 + c$

(B) $e^{\mathrm{Tan}^{-1}(x)}\left(\mathrm{Tan}^{-1}x\right) + c$

(C) $e^{\mathrm{Tan}^{-1}(x)}\left(\mathrm{Tan}^{-1}x\right)^3 + c$

(D) $-e^{\mathrm{Tan}^{-1}(x)}\left(\mathrm{Tan}^{-1}x\right)^2 + c$

Answer: (A) $e^{\mathrm{Tan}^{-1}(x)}\left(\mathrm{Tan}^{-1}x\right)^2 + c$ · The council's preliminary key

Q364 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

If $\int \sqrt[3]{x}\left\{1+\sqrt[3]{x^4}\right\}^{1/7}dx = A\left(1+\sqrt[3]{x^4}\right)^B + C$, then value of $AB =$ _____

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

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

(C) $\frac{3}{32}$

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

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

Q365 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

$\int \frac{\sqrt{2}\sin x}{\sin\left(x+\frac{\pi}{4}\right)}dx +$

(A) $x + \log\left|\sin\left(x-\frac{\pi}{4}\right)\right| + c$

(B) $x - \log\left|\sin\left(x-\frac{\pi}{4}\right)\right| + c$

(C) $x + \log\left|\sin\left(x+\frac{\pi}{4}\right)\right| + c$

(D) $x - \log\left|\sin\left(x+\frac{\pi}{4}\right)\right| + c$

Answer: (D) $x - \log\left|\sin\left(x+\frac{\pi}{4}\right)\right| + c$ · The council's preliminary key

Q366 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

$$\int 3^x \left(f'(x) + f(x)\log 3\right) dx =$$

(A) $3^x f'(x) + c$

(B) $3^x \log 3 + c$

(C) $3^x f(x) + c$

(D) $3^x + c$

Answer: (C) $3^x f(x) + c$ · The council's preliminary key

Q367 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

$$\int \frac{x + \sin x}{1 + \cos x} dx =$$

(A) $x \cot\left(\frac{x}{2}\right) + c$

(B) $\cot\left(\frac{x}{2}\right) + c$

(C) $\tan\left(\frac{x}{2}\right) + c$

(D) $x \tan\left(\frac{x}{2}\right) + c$

Answer: (D) $x \tan\left(\frac{x}{2}\right) + c$ · The council's preliminary key

Q368 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

If $\int \frac{3\cos x - 2\sin x}{4\sin x + 5\cos x} dx = A \log|5\cos x + 4\sin x| + Bx + c$, then A and B are _____

(A) $A = \frac{22}{41}$ & $B = \frac{-7}{41}$

(B) $A = \frac{-22}{41}$ & $B = \frac{7}{41}$

(C) $A = \frac{-22}{41}$ & $B = \frac{-7}{41}$

(D) $A = \frac{22}{41}$ & $B = \frac{7}{41}$

Answer: (D) $A = \frac{22}{41}$ & $B = \frac{7}{41}$ · The council's preliminary key

Q369 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

$$\int \frac{x - 1}{(x - 2)(x - 3)} dx =$$

(A) $2\log|x-3|+\log|x-2|+c$

(B) $\log|x-3|-\log|x-2|+c$

(C) $\log|x-3|^2-\log|x+2|+c$

(D) $\log\left|\frac{(x-3)^2}{x-2}\right|+c$

Answer: (D) $\log\left|\frac{(x-3)^2}{x-2}\right|+c$ · The council's preliminary key

Q370 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

$\int\left\{\frac{x}{a}+\frac{b}{x}+x^a+b^x+ab\right\}dx=$

(A) $\frac{x^2}{2a}+\frac{b}{x^2}+\frac{x^{a+1}}{a+1}+\frac{b^x}{\log b}+c$

(B) $\frac{x^2}{2a}+b\log|x|+\frac{x^{a+1}}{a+1}+\frac{b^x}{\log b}+abx+c$

(C) $\frac{1}{a}+b\log|x|+ax^{a-1}+b^x\log b+ab+c$

(D) $\frac{x^2}{2a}+b\log|x|+\frac{x^{a+1}}{a+1}+\frac{b^x}{\log a}+abx+c$

Answer: (B) $\frac{x^2}{2a}+b\log|x|+\frac{x^{a+1}}{a+1}+\frac{b^x}{\log b}+abx+c$ · The council's preliminary key

Q371 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

$\int(x+1)(x+2)^4(x+3)\,dx=$

(A) $\frac{(x+1)^2}{2}+\frac{(x+2)^2}{5}+\frac{(x+3)^2}{2}+c$

(B) $\frac{(x+2)^7}{7}-\frac{(x+2)^5}{5}+c$

(C) $\frac{(x+2)^7}{7}+\frac{(x+2)^5}{5}+c$

(D) $\frac{(x+3)^7}{7}-\frac{(x+3)^5}{5}+c$

Answer: (B) $\frac{(x+2)^7}{7}-\frac{(x+2)^5}{5}+c$ · The council's preliminary key

Q372 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

If $\int\frac{\sqrt{1-x^4}}{x^7}dx=f(x)\left\{\sqrt{1-x^4}\right\}^n+c$, then $(f(x))^n=$ _____

(A) $\frac{-1}{6x^6}$

(B) $\frac{-1}{216x^{18}}$

(C) $\frac{1}{36x^{12}}$

(D) $\frac{1}{216x^{18}}$

Answer: (B) $\frac{-1}{216x^{18}}$ · The council's preliminary key

Q373 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

If $\int\frac{dx}{\cos^4 x+\sin^4 x}=\frac{1}{\sqrt{2}}\mathrm{Tan}^{-1}[g(x)]+c$, then $g(x)$ equals _____

EdLoop EAPCET

(A) $\frac{\tan x-\cot x}{\sqrt{2}}$
(B) $\frac{\tan x+\cot x}{\sqrt{2}}$
(C) $\frac{\sin x-\cos x}{\sqrt{2}}$
(D) $\frac{\sin x+\cos x}{\sqrt{2}}$

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

Q374 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

$\int (1-\cos x)\operatorname{cosec}^2 x\,dx =$

(A) $\tan\left(\frac{x}{2}\right)+c$
(B) $-\tan\left(\frac{x}{2}\right)+c$
(C) $2\tan\left(\frac{x}{2}\right)+c$
(D) $-2\tan\left(\frac{x}{2}\right)+c$

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

Q375 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

Find the value of k if $\int \cos^k(x)\sin(x)\,dx = \frac{-1}{4}\cos^4(x)+c$

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

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

Q376 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

If $f'(x)=\tan^2(x)+\cot^2(x)$ and $f\left(\frac{\pi}{4}\right)=0$, then $f(x)=$ _____

(A) $\tan(x)-\cot(x)-x+\frac{\pi}{2}$
(B) $\tan(x)-\cot(x)-2x+\frac{\pi}{2}$
(C) $\tan(x)+\cot(x)-2x+\frac{\pi}{2}$
(D) $\sec(x)-\operatorname{cosec}(x)-2x+\frac{\pi}{2}$

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

Q377 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

$\int \frac{\sin x-\cos x}{\sqrt{\sin 2x}}\,dx =$

(A) $-\log\left|\sin x-\cos x+\sqrt{\sin 2x}\right|+c$

(B) $-\log\left|\sin x+\cos x-\sqrt{\sin 2x}\right|+c$

(C) $-\log\left|\sin x+\cos x+\sqrt{\sin 2x}\right|+c$

(D) $-\log\left|\sin x-\cos x-\sqrt{\sin 2x}\right|+c$

Answer: (C) $-\log\left|\sin x+\cos x+\sqrt{\sin 2x}\right|+c$ · The council's preliminary key

Q378 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

$\int \frac{\sin\alpha}{\sqrt{1+\cos\alpha}}d\alpha =$

(A) $-2\sqrt{2}\cos\left(\frac{\alpha}{2}\right)+c$

(B) $2\sqrt{2}\cos\left(\frac{\alpha}{2}\right)+c$

(C) $\sqrt{2}\cos\left(\frac{\alpha}{2}\right)+c$

(D) $-\sqrt{2}\cos\left(\frac{\alpha}{2}\right)+c$

Answer: (A) $-2\sqrt{2}\cos\left(\frac{\alpha}{2}\right)+c$ · The council's preliminary key

Q379 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

If $\int \frac{\cos 4x+1}{\cot x-\tan x}dx = k\cos 4x+c$, then "$k$" is equal to _____

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

(B) $\frac{-1}{8}$

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

(D) $\frac{-1}{5}$

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

Q380 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

If $\int\left[\cos(x)\cdot\frac{d}{dx}(\operatorname{cosec}(x))\right]dx = f(x)+g(x)+c$, then $f(x)\cdot g(x) =$

(A) $x\cot(x)$

(B) $x\tan(x)$

(C) $x\cos(x)$

(D) 1

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

EdLoop EAPCET

Q381 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

If $\int \frac{(2x+1)^6}{(3x+2)^8}\,dx = P\left(\frac{2x+1}{3x+2}\right)^Q + R$, then $\frac{P}{Q} =$ _____

(A) $\frac{1}{7^2}$
(B) $\frac{1}{7}$
(C) 7^2
(D) 7

Answer: (A) $\frac{1}{7^2}$ · The council's preliminary key

Q382 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

If $f'(x) = x + \frac{1}{x}$, then $f(x) =$ _____

(A) $x^2 + \log(x) + c$
(B) $\frac{x^2}{2} + \log(x) + c$
(C) $x + \log(x) + c$
(D) $\frac{x}{2} + \log(x) + c$

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

Q383 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

If $f(x) = \frac{1}{(\cos^2 x)\sqrt{1+\tan x}}$, then its anti-derivative $F(x) =$ _____, given $F(0) = 4$

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

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

Q384 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

If the primitive of $\cos(\log x)$ is $f(x)\{\cos(g(x)) + \sin(h(x))\}$, then which among the following is true?

(A) $h'(x) = \frac{-1}{x}$
(B) $f'(x) = \frac{1}{2}$
(C) $g'(x) = \log(x)$
(D) $h(x) = \frac{x}{2}$

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

EdLoop EAPCET

Q385 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

$\int \frac{\sec x}{\sqrt{\sin(2x+\theta)+\sin\theta}}\,dx =$

(A) $\sqrt{(\tan x+\tan\theta)\sec\theta}+c$

(B) $\sqrt{2(\tan x+\tan\theta)\sec\theta}+c$

(C) $\sqrt{2(\sin x+\tan\theta)\sec\theta}+c$

(D) $\sqrt{2(\cos x+\tan\theta)\sec\theta}+c$

Answer: (B) $\sqrt{2(\tan x+\tan\theta)\sec\theta}+c$ · The council's preliminary key

Q386 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

If $\int \frac{dx}{x\left(\sqrt{x^4-1}\right)} = \frac{1}{k}\mathrm{Sec}^{-1}(x^k)$, then the value of $k =$ _____

(A) 1

(B) 2

(C) 3

(D) 4

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

Q387 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

$\int \frac{e^x(x+3)}{(x+5)^3}\,dx =$

(A) $\frac{e^x}{(x+5)^2}+c$

(B) $e^x(x+5)^2+c$

(C) $e^x(x+3)^2+c$

(D) $\frac{e^x}{(x+3)^2}+c$

Answer: (A) $\frac{e^x}{(x+5)^2}+c$ · The council's preliminary key

Q388 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

If $\int \frac{(x-1)^2}{(x^2+1)^2}\,dx = \mathrm{Tan}^{-1}(x)+g(x)+k$, then $g(x)$ is equal to _____

EdLoop EAPCET

(A) $\mathrm{Tan}^{-1}\left(\frac{x}{2}\right)$

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

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

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

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

Q389 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

If $\int \frac{1-(\cot x)^{2021}}{\tan x+(\cot x)^{2022}}\,dx = \frac{1}{A}\log\left|(\sin x)^{2023}+(\cos x)^{2023}\right|+c$, then $A=$ _____

(A) 2020

(B) 2021

(C) 2022

(D) 2023

Answer: (D) 2023 · The council's preliminary key

Q390 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

$\int \frac{1+x+\sqrt{x+x^2}}{\sqrt{x}+\sqrt{1+x}}\,dx =$

(A) $\frac{1}{2}(\sqrt{1+x})+c$

(B) $\sqrt{1+x}+c$

(C) $2(1+x)^{3/2}+c$

(D) $\frac{2}{3}(1+x)^{3/2}+c$

Answer: (D) $\frac{2}{3}(1+x)^{3/2}+c$ · The council's preliminary key

Q391 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

$\int(\cos x)\log\cot\left(\frac{x}{2}\right)dx =$

(A) $(\sin x)\log\cot\left(\frac{x}{2}\right)+c$

(B) $(\cos x)\log\cot\left(\frac{x}{2}\right)+c$

(C) $(\sin x)\log\cot\left(\frac{x}{2}\right)+x+c$

(D) $(\sin x)\log\cot\left(\frac{x}{2}\right)-x+c$

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

Q392 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

$\int\sqrt{e^{4x}+e^{2x}}\,dx =$

EdLoop EAPCET

(A) $\frac{1}{2}e^x\left(\sqrt{e^{2x}+1}\right)+\frac{1}{2}\text{Sinh}^{-1}(e^x)+c$

(B) $\frac{1}{2}e^x\left(\sqrt{e^{2x}+1}\right)+\text{Sinh}^{-1}(e^x)+c$

(C) $\frac{1}{2}\left(\sqrt{e^{2x}+1}\right)+\frac{1}{2}\text{Sinh}^{-1}(e^x)+c$

(D) $\sqrt{e^{4x}+e^{2x}}+\sqrt{e^{2x}+1}+c$

Answer: (A) $\frac{1}{2}e^x\left(\sqrt{e^{2x}+1}\right)+\frac{1}{2}\text{Sinh}^{-1}(e^x)+c$ · The council's preliminary key

Q393 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

If $\int\frac{1}{1+\sin x}dx=\tan(f(x))+c$, then $f'(0)=$ _____

(A) 0

(B) 1

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

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

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

Q394 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

$$\int\frac{x^2}{1+x^6}dx=$$

(A) x^3+C

(B) $\frac{1}{3}\text{Tan}^{-1}(x^3)+C$

(C) $\log(1+x^3)$

(D) $\frac{1}{1+x^3}+C$

Answer: (B) $\frac{1}{3}\text{Tan}^{-1}(x^3)+C$ · The council's preliminary key

Q395 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

$$\int\frac{dx}{(x^2-a^2)^{3/2}}=$$

(A) $\frac{a^2x}{\sqrt{(x^2-a^2)}}+C$

(B) $-\frac{1}{a^2}(x^2-a^2)^{5/2}+C$

(C) $-\frac{x}{a^2\sqrt{(x^2-a^2)}}+C$

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

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

EdLoop EAPCET

Q396 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

For $x \geq 0$, $\int \sqrt{x^2+2x}\,dx =$

(A) $\frac{x+1}{2}\sqrt{x^2+2x} + \frac{1}{2}\text{Sinh}^{-1}\frac{(x+1)}{2} + C$

(B) $\frac{x+1}{2}\sqrt{x^2+2x} + \frac{1}{2}\text{Sinh}^{-1}(x+1) + C$

(C) $\frac{x+1}{2}\sqrt{x^2+2x} - \frac{1}{2}\text{Cosh}^{-1}\frac{(x+1)}{2} + C$

(D) $\frac{x+1}{2}\sqrt{x^2+2x} - \frac{1}{2}\text{Cosh}^{-1}(x+1) + C$

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

Q397 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

Let $\tan^0 x = 1$. If $\int \left(\sum_{k=0}^{7} \tan^k x\right) dx = \sum_{k=1}^{7} A_k \tan^k x + C$, then $\sum_{k=1}^{7} A_k =$

(A) $\frac{76}{25}$

(B) $\frac{28}{15}$

(C) $\frac{38}{35}$

(D) $\frac{124}{75}$

Answer: (B) $\frac{28}{15}$ · The council's preliminary key

Q398 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

$\int \sqrt{x^2+x+1}\,dx \times \int \frac{1}{\sqrt{x^2+x+1}}\,dx =$

(A) $x + C$

(B) $\left(\frac{2x+1}{4}\sqrt{x^2+x+1} + \frac{3}{8}\sinh^{-1}\frac{2x+1}{\sqrt{3}}\right)\sinh^{-1}\left(\frac{2x+1}{\sqrt{3}}\right) + C$

(C) $\frac{2x+1}{2}\sinh^{-1}\left(\sqrt{x^2+x+1}\right) + \left(\frac{3}{8}\sinh^{-1}\frac{2x+1}{\sqrt{3}}\right)^2 + C$

(D) $\frac{2x+1}{2}\left(\sinh^{-1}\frac{2x+1}{\sqrt{3}}\right)^2 + C$

Answer: (B) $\left(\frac{2x+1}{4}\sqrt{x^2+x+1} + \frac{3}{8}\sinh^{-1}\frac{2x+1}{\sqrt{3}}\right)\sinh^{-1}\left(\frac{2x+1}{\sqrt{3}}\right) + C$ · The council's preliminary key

Q399 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

$\int \frac{dx}{\sqrt{(5+2x+x^2)^3}} =$

(A) $\frac{1}{4}\frac{1}{\sqrt{5+2x+x^2}}+C$
(B) $\frac{1}{\sqrt{5+2x+x^2}}+C$
(C) $\frac{x+1}{\sqrt{5+2x+x^2}}+C$
(D) $\frac{1}{4}\frac{x+1}{\sqrt{5+2x+x^2}}+C$

Answer: (D) $\frac{1}{4}\frac{x+1}{\sqrt{5+2x+x^2}}+C$ · The council's preliminary key

Q400 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

$$\int \frac{x\, e^{\frac{x^2}{x^2-2}}}{x^4-4x^2+4}\,dx =$$

(A) $\frac{-1}{4}e^{\frac{x^2}{x^2-2}}+C$
(B) $\frac{1}{4}e^{\frac{x^2}{x^2-2}}+C$
(C) $\frac{1}{x^2-2}e^{\frac{x^2}{x^2-2}}+C$
(D) $\frac{-1}{(x^2-2)^4}e^{\frac{x^2}{x^2-2}}+C$

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

Q401 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

If $\int \frac{2x^{12}+5x^9}{(x^5+x^3+1)^3}\,dx = f(x)+C$, then $f(1)-f(0) =$

(A) $\frac{1}{2}$
(B) $\frac{1}{18}$
(C) $\frac{1}{27}$
(D) $\frac{1}{54}$

Answer: (B) $\frac{1}{18}$ · Checked by our team

Q402 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

$$\int \frac{\sqrt{\cot x}}{\sin 2x}\,dx =$$

(A) $\sqrt{\cot x}+C$
(B) $-\sqrt{\cot x}+C$
(C) $\sqrt{\tan x}+C$
(D) $-\sqrt{\tan x}+C$

Answer: (B) $-\sqrt{\cot x}+C$ · The council's preliminary key

Q403 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

If $\int \frac{1}{(x-2)^5(x-1)^4}dx = \sum_{r=-4}^{-1} A_r \left(\frac{x-2}{x-1}\right)^r + \sum_{r=1}^{3} A_r \left(\frac{x-2}{x-1}\right)^r + Bf(x)$, then $f(x) =$

(A) $\log(x-2) - \log(x-1)$

(B) $\left(\frac{x-2}{x-1}\right) + \log x$

(C) $x + \log\left(\frac{x-2}{x-1}\right)$

(D) $\log x$

Answer: (A) $\log(x-2) - \log(x-1)$ · The council's preliminary key

Q404 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

If $f(x) + K$ is obtained by evaluating $\int \frac{x^3}{(1+x^2)^3}dx$ using the substitution $x = \tan\theta$ and $g(x) + C$ is obtained by evaluating $\int \frac{x^3}{(1+x^2)^3}dx$, using the substitution $x^2 + 1 = Z$, then $f(x) - g(x) + K - C =$

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

(B) any constant

(C) any function of x

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

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

Q405 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

For $-1 < x < 1$ and $y > 1$, if $\int \frac{x}{\sqrt{1+x}+\sqrt{1-x}}dx + \int \frac{y}{\sqrt{y+1}+\sqrt{y-1}}dy = A(1+x)^{3/2} + B(1-x)^{3/2} + f(y)(y+1)^{3/2} + g(y)(y-1)^{3/2} + C$, then $Af(y) + Bg(y) =$

(A) $\frac{2y}{15}$

(B) $\frac{-4}{45}$

(C) $\frac{-4}{15}$

(D) $\frac{3y+2}{45}$

Answer: (B) $\frac{-4}{45}$ · The council's preliminary key

Q406 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

$\int \frac{dx}{\sin x + \cos x} =$

(A) $\frac{1}{\sqrt{2}} \log\left|\tan\left(\frac{x}{2} + \frac{\pi}{8}\right)\right| + C$

(B) $\frac{1}{\sqrt{2}} \log\left|\tan\left(\frac{x}{2} + \frac{\pi}{4}\right)\right| + C$

(C) $\frac{1}{\sqrt{2}} \log\left|\tan\left(\frac{x}{4} + \frac{\pi}{2}\right)\right| + C$

(D) $\frac{1}{\sqrt{2}} \log\left|\tan\left(\frac{x}{8} + \frac{\pi}{2}\right)\right| + C$

Answer: (A) $\frac{1}{\sqrt{2}} \log\left|\tan\left(\frac{x}{2} + \frac{\pi}{8}\right)\right| + C$ · The council's preliminary key

EdLoop EAPCET

Q407 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

$\int (x+2)\sqrt{x+3}\,dx =$

(A) $\frac{2}{15}\sqrt{x+3}\left(3x^2-13x+12\right)+C$

(B) $\frac{2}{15}\sqrt{x+3}\left(3x^2+13x+12\right)+C$

(C) $\frac{2}{5}\sqrt{x+3}\left(3x^2-12x+13\right)+C$

(D) $\frac{2}{5}\sqrt{x+3}\left(3x^2+12x+13\right)+C$

Answer: (B) $\frac{2}{15}\sqrt{x+3}\left(3x^2+13x+12\right)+C$ · The council's preliminary key

Q408 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

$\int \frac{(1-\cos x)^{2/7}}{(1+\cos x)^{9/7}}\,dx =$

(A) $\frac{7}{11}\left(\tan\frac{x}{2}\right)^{\frac{11}{7}}+C$

(B) $\frac{7}{11}\left(\tan\frac{x}{2}\right)^{\frac{7}{11}}+C$

(C) $\frac{7}{11}\left(\cot\frac{x}{2}\right)^{\frac{11}{7}}+C$

(D) $\frac{11}{7}\left(\cot\frac{x}{2}\right)^{\frac{7}{11}}+C$

Answer: (A) $\frac{7}{11}\left(\tan\frac{x}{2}\right)^{\frac{11}{7}}+C$ · The council's preliminary key

Q409 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

If $f(x)=\dfrac{3-8x}{3x-1}$ and $\int f(y)\,dy = Ay + B\log(3y-1)+C$, then $\dfrac{A-3B}{2} =$

(A) 0

(B) $\dfrac{-5}{2}$

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

(D) $\dfrac{-3}{2}$

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

Q410 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

$\int \sqrt{\sin x}\,\cos x\,dx = \dfrac{2}{3}(\sin x)^{3/2}+C$ is valid when x lies in the interval

(A) $(-\infty,\infty)$

(B) $\left(\dfrac{-\pi}{2},\dfrac{\pi}{2}\right)$

(C) $(2n\pi,(2n+1)\pi),\ n\in\mathbb{N}$

(D) $((2n+1)\pi,(2n+2)\pi),\ n\in\mathbb{N}$

Answer: (C) $(2n\pi,(2n+1)\pi),\ n\in\mathbb{N}$ · The council's preliminary key

EdLoop EAPCET

Q411 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

For $x > 0$, $\int \left(\frac{\sqrt{1+x+x^2}}{1+x} + \frac{1}{2\sqrt{1+x+x^2}} - \frac{1}{(1+x)\sqrt{1+x+x^2}} \right) dx =$

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

(B) $\sqrt{1+x} + C$

(C) $\frac{1}{\sqrt{1+x}} + C$

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

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

Q412 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

$\int \frac{dx}{\sqrt{2e^x - 1}} =$

(A) $2\,\mathrm{Tan}^{-1}\left(\sqrt{2e^x - 1}\right) + c$

(B) $2\,\mathrm{Sin}^{-1}\left(\sqrt{2e^x - 1}\right) + c$

(C) $2\,\mathrm{Cos}^{-1}\left(\sqrt{2e^x - 1}\right) + c$

(D) $2\,\mathrm{Cosec}^{-1}\left(\sqrt{2e^x - 1}\right) + c$

Answer: (A) $2\,\mathrm{Tan}^{-1}\left(\sqrt{2e^x - 1}\right) + c$ · The council's preliminary key

Q413 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

If $\int \frac{dx}{e^x + 4e^{-x}}\,dx = f(x) + c$, then $f(x)$ is

(A) $2\,\mathrm{Tan}^{-1}(2e^x)$

(B) $\frac{1}{2}\mathrm{Tan}^{-1}\left(\frac{e^x}{2}\right)$

(C) $2\,\mathrm{Tan}^{-1}\left(\frac{e^x}{2}\right)$

(D) $\frac{1}{2}\mathrm{Tan}^{-1}(2e^x)$

Answer: (B) $\frac{1}{2}\mathrm{Tan}^{-1}\left(\frac{e^x}{2}\right)$ · The council's preliminary key

Q414 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

If $I_n = \int (\log x)^n\,dx$, then $I_n + nI_{n-1} =$

EdLoop EAPCET

(A) $(x \log x)^n$

(B) $x(\log x)^n$

(C) $n(\log x)^n$

(D) $(\log x)^{n-1}$

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

Q415 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

$$\int \frac{2t+1}{t^2+t+1}\,dt =$$

(A) $\log|t^2+t+1|+c$

(B) $\log|t^2-t+1|+c$

(C) $\log|t^2-2t-1|+c$

(D) $\log|t^2-3t+1|+c$

Answer: (A) $\log|t^2+t+1|+c$ · The council's preliminary key

Q416 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

$$\int \frac{3^x}{\sqrt{1-9^x}}\,dx =$$

(A) $\mathrm{Sin}^{-1}(3^x)\cdot(\log 3)^{-1}+c$

(B) $-\mathrm{Sin}^{-1}(3^x)\cdot\log 3+c$

(C) $\frac{1}{3}\mathrm{Sin}^{-1}(3^x)+c$

(D) $\frac{1}{9}\mathrm{Sin}^{-1}(3^x)+c$

Answer: (A) $\mathrm{Sin}^{-1}(3^x)\cdot(\log 3)^{-1}+c$ · The council's preliminary key

Q417 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

If $f'(x)=a\sin x+b\cos x$, $f'(0)=4$, $f(0)=3$ and $f(\pi/2)=5$, then $f(x)=$

(A) $-2\cos x-4\sin x+1$

(B) $2\cos x+4\sin x+1$

(C) $2\sin x-4\cos x+1$

(D) $2\sin x+4\cos x+1$

Answer: (B) $2\cos x+4\sin x+1$ · The council's preliminary key

Q418 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

$$\int \frac{x^{n-1}}{x^{2n}+4}\,dx =$$

EdLoop EAPCET

(A) $\frac{1}{2n}\text{Tan}^{-1}\left(\frac{x^n}{2}\right)+c$
(B) $\frac{n}{2}\text{Tan}^{-1}\left(\frac{x^n}{2}\right)+c$
(C) $\frac{n}{2}\text{Sin}^{-1}\left(\frac{x^n}{2}\right)+c$
(D) $\frac{1}{n}\text{Tan}^{-1}\left(\frac{x^n}{2}\right)+c$

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

Q419 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

$$\int \frac{1+\tan^2 x}{1-\tan^2 x}\,dx =$$

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

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

Q420 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

$$\int (1+e^{-x})^{-1}\,dx =$$

(A) $\log(1+e^{-x})+c$
(B) $\log(1+e^{x})+c$
(C) $\log(1-e^{x})+c$
(D) $\log(e^{x}-1)+c$

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

Q421 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

$$\int_0^1 (1+x)\log(1+x)\,dx =$$

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

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

Q422 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

$$\int \left(\sqrt{1+\sin(2x)}\right)dx =$$

(A) $\cos(x) + \sin(x) + c$

(B) $\cos(x) - \sin(x) + c$

(C) $\sin(x) - \cos(x) + c$

(D) $\sin(x) - \operatorname{cosec}(x) + c$

Answer: (C) $\sin(x) - \cos(x) + c$ · The council's preliminary key

Q423 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

$$\int \frac{\cos x - \sin x}{5 + \sin(2x)}\, dx =$$

(A) $\frac{1}{2}\mathrm{Cot}^{-1}\left[\frac{1}{2}(\sin x + \cos x)\right] + c$

(B) $\frac{1}{2}\mathrm{Tan}^{-1}\left[\frac{1}{2}(\sin x + \cos x)\right] + c$

(C) $\frac{1}{2}\mathrm{Sin}^{-1}\left[\frac{1}{2}(\sin x + \cos x)\right] + c$

(D) $\frac{1}{2}\mathrm{Cos}^{-1}\left[\frac{1}{2}(\sin x + \cos x)\right] + c$

Answer: (B) $\frac{1}{2}\mathrm{Tan}^{-1}\left[\frac{1}{2}(\sin x + \cos x)\right] + c$ · The council's preliminary key

Q424 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

$$\int e^{3\log x}(x^4 + 1)^{-1}\, dx =$$

(A) $e^{3\log x} + c$

(B) $\frac{1}{4}\log(x^4 + 1) + c$

(C) $\frac{1}{3}\log(x^4 + 1) + c$

(D) $\frac{x^4}{x^4 + 1}$

Answer: (B) $\frac{1}{4}\log(x^4 + 1) + c$ · The council's preliminary key

Q425 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

$$\int \frac{\sin(2x)}{\sin^2(x) + 2\cos^2(x)}\, dx =$$

(A) $\log|1 + \cos^2(x)| + c$

(B) $-\log|1 + \sin^2(x)| + c$

(C) $\log|1 + \tan^2(x)| + c$

(D) $-\log|1 + \cos^2(x)| + c$

Answer: (D) $-\log|1 + \cos^2(x)| + c$ · The council's preliminary key

EdLoop EAPCET

Q426 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

If $\int \frac{5\tan x}{(\tan x)-2}\,dx = \alpha x + \beta \log|\sin x - 2\cos x| + \gamma$, then $\alpha - \beta =$

(A) -1

(B) 2

(C) 0

(D) 1

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

Q427 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

$\int e^{x\,\mathrm{cosec}\,x} \cdot \mathrm{cosec}\,x \cdot (1 - x\cot x)\,dx =$

(A) $e^{x\cot x} + c$

(B) $e^{x\,\mathrm{cosec}\,x} + c$

(C) $e^{-x\,\mathrm{cosec}\,x} + c$

(D) $e^{-x\cot x} + c$

Answer: (B) $e^{x\,\mathrm{cosec}\,x} + c$ · The council's preliminary key

Q428 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

$\int \frac{(1+x)e^x}{\cot(xe^x)}\,dx =$

(A) $\log(\cos(xe^x)) + c$

(B) $\log(\cot(xe^x)) + c$

(C) $\log(\sec(xe^x)) + c$

(D) $\log(\mathrm{cosec}(xe^x)) + c$

Answer: (C) $\log(\sec(xe^x)) + c$ · The council's preliminary key

Q429 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

Let the equation of the curve passing through the point $(0,1)$ be given by $y = \int x^3 e^{x^4}\,dx$. If the equation of the curve is written in the form $x = f(y)$, then $f(y) =$

(A) $\log|4y-3|$

(B) $(\log|4y-3|)^{1/4}$

(C) $\left(\log\left|\frac{3-4y}{4}\right|\right)^{1/4}$

(D) $\log\left|\frac{4y-3}{4}\right|$

Answer: (B) $(\log|4y-3|)^{1/4}$ · The council's preliminary key

EdLoop EAPCET

Q430 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

$\int \frac{\sin^3(x)+\cos^3(x)}{\sin^2(x)\cdot\cos^2(x)}\,dx =$

(A) $\sec(x) - \operatorname{cosec}(x) + c$

(B) $\tan(x) + \cot(x) + c$

(C) $\operatorname{cosec}(x) - \cot(x) + c$

(D) $\tan(x) - \cot(x) + c$

Answer: (A) $\sec(x) - \operatorname{cosec}(x) + c$ · The council's preliminary key

Q431 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

$\int \frac{dx}{\cos^2(x)+\sin(2x)} =$

(A) $\frac{1}{2}\log|1 + 2\cos(x)| + c$

(B) $\frac{1}{2}\log|1 - 2\tan(x)| + c$

(C) $\frac{1}{2}\log|1 + 2\tan(x)| + c$

(D) $\frac{1}{2}\log|1 + 2\cot(x)| + c$

Answer: (C) $\frac{1}{2}\log|1 + 2\tan(x)| + c$ · The council's preliminary key

Q432 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

$\int \frac{(x+1)^2}{x(x^2+1)}\,dx =$

(A) $\log[x(x^2 + 1)] + c$

(B) $\log|x| + c$

(C) $\log|x| + 2\,\mathrm{Tan}^{-1}(x) + c$

(D) $2\log|x| + \mathrm{Tan}^{-1}(x) + c$

Answer: (C) $\log|x| + 2\,\mathrm{Tan}^{-1}(x) + c$ · The council's preliminary key

Q433 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

If $\int \frac{1 + \cos(4x)}{\cot(x) - \tan(x)}\,dx = k\cos(4x) + c$, then

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

(B) $k = \frac{1}{4}$

(C) $k = \frac{-1}{8}$

(D) $k = \frac{-1}{4}$

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

Q434 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

$\int x(\tan^2 x)\,dx =$

(A) $x\tan(x) - \log(\sec x) - \frac{x^2}{2} + c$

(B) $x\tan(x) + \log(\sec x) - \frac{x^2}{2} + c$

(C) $x\tan(x) - \log(\sec x) + \frac{x^2}{2} + c$

(D) $x\tan(x) + \log(\sec x) + \frac{x^2}{2} + c$

Answer: (A) $x\tan(x) - \log(\sec x) - \frac{x^2}{2} + c$ · The council's preliminary key

Q435 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

$\int x^{2020}\,(\mathrm{Tan}^{-1}x + \mathrm{Cot}^{-1}x)\,dx =$

(A) $\frac{x^{2021}}{2020}(\mathrm{Tan}^{-1}x + \mathrm{Cot}^{-1}x) + c$

(B) $\frac{x^{2021}}{2021}(\mathrm{Tan}^{-1}x + \mathrm{Cot}^{-1}x) + c$

(C) $\frac{\pi x^{2021}}{2021} + \frac{\pi}{2} + c$

(D) $\frac{x^{52}}{52} + \frac{\pi}{2} + c$

Answer: (B) $\frac{x^{2021}}{2021}(\mathrm{Tan}^{-1}x + \mathrm{Cot}^{-1}x) + c$ · The council's preliminary key

Q436 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

Integral $\int \left(\frac{2x^3 - 3x + 5}{2x^2}\right) dx$ is valid for

(A) $x \in R - \{0\}$

(B) $x > 0$

(C) $x < 0$

(D) $x \in R$

Answer: (A) $x \in R - \{0\}$ · Checked by our team

Q437 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

$\int \left[\log(\log x) + \frac{1}{(\log x)^2}\right] dx =$

(A) $x\left[\log(\log x)+\log x\right]+c$

(B) $\dfrac{x}{\log(\log x)}+c$

(C) $x\log(\log x)+c$

(D) $x\left[\log(\log x)-\dfrac{1}{\log x}\right]+c$

Answer: (D) $x\left[\log(\log x)-\dfrac{1}{\log x}\right]+c$ · The council's preliminary key

Q438 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

$$\int \sqrt{x-1}\,\left(x\sqrt{x+1}\right)^{-1}dx=$$

(A) $\ln\left|x+\sqrt{x^2-1}\right|-\mathrm{Sec}^{-1}(x)+c$

(B) $\ln\left|x-\sqrt{x^2-1}\right|-\mathrm{Tan}^{-1}(x)+c$

(C) $\ln\left|x+\sqrt{x^2-1}\right|+\mathrm{Sec}^{-1}(x)+c$

(D) $\ln\left|x+\sqrt{x^2-1}\right|-\mathrm{Tan}^{-1}(x)+c$

Answer: (A) $\ln\left|x+\sqrt{x^2-1}\right|-\mathrm{Sec}^{-1}(x)+c$ · The council's preliminary key

Q439 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

$$\int \frac{\cos 7x-\cos 8x}{1+2\cos 5x}\,dx=$$

(A) $\sin 2x-\dfrac{1}{3}\sin 3x+c$

(B) $\dfrac{1}{2}\sin 2x-\dfrac{1}{3}\sin 3x+c$

(C) $\dfrac{1}{2}\sin 2x-\sin 3x+c$

(D) $\dfrac{1}{3}\sin 2x-\dfrac{1}{2}\sin 3x+c$

Answer: (B) $\dfrac{1}{2}\sin 2x-\dfrac{1}{3}\sin 3x+c$ · The council's preliminary key

Q440 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

Evaluate $\int \sin(\sqrt{k})\,dk$ on $(0,\infty)$

(A) $2[\cos(\sqrt{k})-\sqrt{k}\sin(\sqrt{k})]+c$

(B) $2[\cos(\sqrt{k})+\sqrt{k}\sin(\sqrt{k})]+c$

(C) $2[\sqrt{k}\cos(\sqrt{k})-\sqrt{k}\sin(\sqrt{k})]+c$

(D) $2[\sin(\sqrt{k})-\sqrt{k}\cos(\sqrt{k})]+c$

Answer: (D) $2[\sin(\sqrt{k})-\sqrt{k}\cos(\sqrt{k})]+c$ · The council's preliminary key

EdLoop EAPCET

Q441 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

$\int e^{x/2}\left(\frac{2+\sin x}{1+\cos x}\right)dx =$

(A) $2e^{x/2}\text{cosec}(x/2)+c$

(B) $2e^{x/2}\tan(x/2)+c$

(C) $2e^{x/2}\cos(x/2)+c$

(D) $2e^{x/2}\sin(x/2)+c$

Answer: (B) $2e^{x/2}\tan(x/2)+c$ · The council's preliminary key

Q442 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

$\int\left[\frac{1}{\log x}-\frac{1}{(\log x)^2}\right]dx =$

(A) $x\log x+c$

(B) $-x\log x+c$

(C) $\frac{\log x}{x}+c$

(D) $\frac{x}{\log x}+c$

Answer: (D) $\frac{x}{\log x}+c$ · The council's preliminary key

Q443 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

$\int\frac{x^3-1}{x^3+x}dx =$

(A) $x+\log|x|+\frac{1}{2}\log(x^2+1)+\text{Sin}^{-1}(x)+c$

(B) $x-\log|x|+\frac{1}{2}\log(x^2+1)-\text{Sin}^{-1}(x)+c$

(C) $x+\log|x|-\frac{1}{2}\log(x^2+1)+\text{Tan}^{-1}(x)+c$

(D) $x-\log|x|+\frac{1}{2}\log(x^2+1)-\text{Tan}^{-1}(x)+c$

Answer: (D) $x-\log|x|+\frac{1}{2}\log(x^2+1)-\text{Tan}^{-1}(x)+c$ · The council's preliminary key

Q444 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

If $f(x)$ is a polynomial of the second degree in x such that $f(0)=f(1)=3f(2)=-3$, then $\int\frac{f(x)}{x^3-1}dx =$

(A) $\log\left(\frac{x^2+x+1}{|x-1|}\right)+\frac{1}{\sqrt{3}}\text{Tan}^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)+c$

(B) $\log\left(\frac{x^2+x+1}{|x-1|}\right)-\frac{2}{\sqrt{3}}\text{Tan}^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)+c$

(C) $\log\left(\frac{x^2+x+1}{|x-1|}\right)-\frac{1}{\sqrt{3}}\text{Tan}^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)+c$

(D) $\log\left(\frac{x^2+x+1}{|x-1|}\right)+\frac{2}{\sqrt{3}}\text{Tan}^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)+c$

Answer: (D) $\log\left(\frac{x^2+x+1}{|x-1|}\right)+\frac{2}{\sqrt{3}}\text{Tan}^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)+c$ · The council's preliminary key

EdLoop EAPCET

Q445 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

$\int \left(1+\frac{x}{1!}+\frac{x^2}{2!}+\cdots\cdots\infty\right) dx =$

(A) $\log(x+1)+c$

(B) $\frac{1}{x+1}+c$

(C) e^x+c

(D) $-e^{-x}+c$

Answer: (C) e^x+c · The council's preliminary key

Q446 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

$\int \frac{2\tan(x)}{1+2\tan^2(x)}\,dx =$

(A) $\log|\cos^2 x+\sin^2 x|+c$

(B) $\log\left|\frac{\cos^2 x}{2}+\sin^2 x\right|+c$

(C) $\log\left|\cos^2 x+\frac{\sin^2 x}{2}\right|+c$

(D) $\log\left|\frac{\cos^2 x}{2}+\frac{\sin^2 x}{2}\right|+c$

Answer: (B) $\log\left|\frac{\cos^2 x}{2}+\sin^2 x\right|+c$ · The council's preliminary key

Q447 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

$\int \sin^3(x)\cdot\cos^3(x)\,dx =$

(A) $\sin^4(x)-\sin^6(x)+c$

(B) $\cos^4(x)-\cos^6(x)+c$

(C) $\frac{1}{4}\sin^4(x)-\frac{1}{6}\sin^6(x)+c$

(D) $\frac{1}{4}\cos^4(x)-\frac{1}{6}\cos^6(x)+c$

Answer: (C) $\frac{1}{4}\sin^4(x)-\frac{1}{6}\sin^6(x)+c$ · The council's preliminary key

Q448 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

$\int \frac{x^4+x^2+1}{x^2-x+1}\,dx =$

(A) $\left(\frac{1}{3}\right)x^3+\left(\frac{1}{2}\right)x^2+x+c$

(B) $\left(\frac{1}{3}\right)x^3-\left(\frac{1}{2}\right)x^2+x+c$

(C) $\left(\frac{1}{3}\right)x^3+\left(\frac{1}{2}\right)x^2-x+c$

(D) $\left(\frac{1}{3}\right)x^3-\left(\frac{1}{2}\right)x^2-x+c$

Answer: (A) $\left(\frac{1}{3}\right)x^3+\left(\frac{1}{2}\right)x^2+x+c$ · The council's preliminary key

Q449 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

If $\int \frac{\cos(13x)-\cos(14x)}{1+2\cos(9x)}\,dx=\frac{\sin(4x)}{a}-\frac{\sin(5x)}{b}+c$, then $a^b=$

EdLoop EAPCET

(A) 4^5
(B) 5^4
(C) 4^4
(D) 5^5

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

Q450 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

Solve $I_n + nI_{n-1}$ if $I_n = \int (\ln x)^n \, dx$

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

Answer: (B) $x(\ln x)^n + k$ · The council's preliminary key

Q451 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

$\int \frac{\cos^3(x)}{\sin^2(x)+\sin(x)} \, dx =$

(A) $\log|\sin(x)| + \sin(x) + c$
(B) $\log|\sin(x)| + \cos(x) + c$
(C) $\log|\cos(x)| - \sin(x) + c$
(D) $\log|\sin(x)| - \sin(x) + c$

Answer: (D) $\log|\sin(x)| - \sin(x) + c$ · The council's preliminary key

Q452 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

If $5(f(x))^2 = xf(x) + 30$ and $\int \frac{(3x^3+(1-30x^2)f(x))}{(10f(x)-x)(x^3-f(x))^2} dx = \frac{A}{Bx^3+Df(x)} + C$, then $A + B + D =$

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

Answer: (B) 1 · Official TGCHE final key

Q453 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

If $\int x[\log(1+x)]^3 dx = \frac{(1+x)^2}{16}(f(x)) + (1+x)(g(x))$, then $f(x) + g(x) =$

EdLoop EAPCET

(A) $\log(1+x)\left[6+9(\log(1+x))-7(\log(1+x))^2\right]+C$

(B) $\log(1+x)x^3+7(\log(1+x))^2+4\log(1+x)+C$

(C) $12-18\log(1+x)+15(\log(1+x))^2-9(\log(1+x))^3+C$

(D) $6\log(1+x)-9(\log(1+x))^2+7(\log(1+x))^3+C$

Answer: (D) $6\log(1+x)-9(\log(1+x))^2+7(\log(1+x))^3+C$ · Official TGCHE final key

Q454 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

$\int \frac{\left(x+\sqrt{1+x^2}\right)^2}{\sqrt{1+x^2}}dx =$

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

(B) $\log\left|x+\sqrt{1+x^2}\right|+C$

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

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

Answer: (D) $\frac{\left(x+\sqrt{1+x^2}\right)^2}{2}+C$ · Official TGCHE final key

Q455 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

$\int\left[\frac{x^4-x}{x^{20}}\right]^{1/4}dx =$

(A) $\frac{4}{15}\left(\frac{(x^3-1)^5}{x^{15}}\right)^{1/4}+C$

(B) $\frac{4}{15}\left(\frac{x^4+1}{x^4}\right)^{1/4}+C$

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

(D) $\frac{3}{4}\left(x^{4/3}+x^{1/3}\right)+C$

Answer: (A) $\frac{4}{15}\left(\frac{(x^3-1)^5}{x^{15}}\right)^{1/4}+C$ · Official TGCHE final key

Q456 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

If $\int\frac{(x-1)\,dx}{(x+1)\sqrt{x^3+x^2+x}}=A\cdot\mathrm{Tan}^{-1}\sqrt{f(x)}+\text{constant}$, then the ordered pair $(A,f(-1))=$

(A) $(2,1)$

(B) $(2,-1)$

(C) $(1,2)$

(D) $(-2,2)$

Answer: (B) $(2,-1)$ · Official TGCHE final key

Q457 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

If $f\left(\frac{2x+3}{3x+5}\right)=x+4$, $x\neq\frac{-5}{3},\frac{2}{3}$ and $\int f(x)\,dx=Ax+B\ln|3x-2|+C$, then $3B-A=$

(A) $\frac{64}{9}$
(B) $\frac{-52}{21}$
(C) $\frac{-10}{3}$
(D) $\frac{-8}{3}$

Answer: (D) $\frac{-8}{3}$ · Official TGCHE final key

Q458 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

If $\int e^x \left(\frac{x^2-8x+19}{(x-1)^5}\right) dx = \frac{e^x(lx+m)}{(x-1)^4} + C$ then $4l + m =$

(A) -5
(B) -2
(C) 1
(D) 0

Answer: (D) 0 · Official TGCHE final key

Q459 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

$\int \frac{dx}{(x-2)\sqrt{x^2-3x+5}} =$

(A) $\frac{-1}{\sqrt{3}}\text{Cosh}^{-1}\left[\frac{7x-8}{\sqrt{37}(x-2)}\right] + C$
(B) $\frac{-1}{\sqrt{3}}\text{Sinh}^{-1}\left[\frac{x+4}{\sqrt{11}(x-2)}\right] + C$
(C) $\frac{-1}{\sqrt{3}}\text{Cosh}^{-1}\left[\frac{x+4}{\sqrt{11}(x-2)}\right] + C$
(D) $\frac{-1}{\sqrt{3}}\text{Sinh}^{-1}\left[\frac{7x-8}{\sqrt{37}(x-2)}\right] + C$

Answer: (B) $\frac{-1}{\sqrt{3}}\text{Sinh}^{-1}\left[\frac{x+4}{\sqrt{11}(x-2)}\right] + C$ · Official TGCHE final key

Q460 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

If $\int e^{\sin^2 x}(\sin x \cos x + \cos^3 x \sin x)dx = e^{\sin^2 x}(1 + f(x)) + c$, then $f'(x) =$

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

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

Q461 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

$\int \frac{25x^2+8}{\sqrt{25x^2+9}}dx =$

(A) $\frac{x}{2}\sqrt{25x^2+9}+\frac{11}{10}\text{Sinh}^{-1}\left(\frac{5x}{3}\right)+C$

(B) $\frac{x}{2}\sqrt{25x^2+9}-\frac{7}{10}\log\left|\frac{5x+\sqrt{25x^2+9}}{3}\right|+C$

(C) $\frac{x}{2}\sqrt{25x^2+9}+\frac{7}{10}\text{Sinh}^{-1}\left(\frac{5x}{3}\right)+C$

(D) $\frac{x}{2}\sqrt{25x^2+9}+\frac{11}{10}\log\left|\frac{5x-\sqrt{25x^2+9}}{3}\right|+C$

Answer: (C) $\frac{x}{2}\sqrt{25x^2+9}+\frac{7}{10}\text{Sinh}^{-1}\left(\frac{5x}{3}\right)+C$ · Official TGCHE final key

Q462 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

$I_{m,n}=\int x^m(\log x)^n dx=$

(A) $\frac{x^{m+1}}{m+1}(\log x)^n-\frac{n}{m+1}I_{m,n-1}$

(B) $\frac{x^m}{m}(\log x)^n-\frac{n-1}{m+1}I_{m+1,n-1}$

(C) $\frac{x^{m+1}}{m}\frac{(\log x)^{n+1}}{n+1}-\frac{n}{m+1}I_{m,n-1}$

(D) $x^m\frac{(\log x)^{n+1}}{n+1}-\frac{n}{m+1}I_{m,n-1}$

Answer: (A) $\frac{x^{m+1}}{m+1}(\log x)^n-\frac{n}{m+1}I_{m,n-1}$ · Official TGCHE final key

Q463 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

$\int\frac{x^2}{\left(\sqrt{4-x^2}\right)^3}dx=$

(A) $\frac{x^2}{\sqrt{4-x^2}}-\text{Sin}^{-1}\left(\frac{x}{2}\right)+C$

(B) $\frac{x}{\sqrt{4-x^2}}-\text{Tan}^{-1}\left(\frac{x}{\sqrt{4-x^2}}\right)+C$

(C) $\frac{x}{\sqrt{4-x^2}}+\text{Sin}^{-1}\left(\frac{2}{\sqrt{4-x^2}}\right)+C$

(D) $\sqrt{4-x^2}-\text{Tan}^{-1}\left(\frac{x}{2}\right)+C$

Answer: (B) $\frac{x}{\sqrt{4-x^2}}-\text{Tan}^{-1}\left(\frac{x}{\sqrt{4-x^2}}\right)+C$ · Official TGCHE final key

Q464 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

$\int\frac{dx}{x\ \ln(x)\ \ln^2(x)\ \ln^3(x)\ldots\ldots\ln^m(x)}=\frac{(\ln(x))^K}{K}+C\Rightarrow 2K=$

(A) $(m+1)(m+2)$
(B) $(2-m)(1-m)$
(C) $(m+1)(2-m)$
(D) $(m+2)(1-m)$

Answer: (D) $(m+2)(1-m)$ · Official TGCHE final key

Q465 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

If $I_m = \int x^m \cos nx\, dx = g(x) - \frac{m(m-1)}{n^2} I_{m-2}$, then $g(x) =$

(A) $\frac{x^m \sin nx}{n} + \frac{m(m-1)x^{m-1}\cos nx}{n^2}$
(B) $\frac{x^m \cos nx}{n} + \frac{x^{m-1}m(m-1)}{n^2}\sin nx$
(C) $\frac{m}{n}\sin nx + \frac{m}{n^2}x^{m-1}\cos nx$
(D) $\frac{x^m \sin nx}{n} + \frac{m}{n^2}x^{m-1}\cos nx$

Answer: (D) $\frac{x^m \sin nx}{n} + \frac{m}{n^2}x^{m-1}\cos nx$ · Official TGCHE final key

Q466 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

Let $I_n = \int \sec^n x\, dx$. If $5I_6 - 4I_4 = f(x)$, then $f\left(\frac{\pi}{4}\right)$ is equal to

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

Answer: (B) 4 · Official TGCHE final key

Q467 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

$$\int \frac{y^2 + \sqrt[3]{y^4} + \sqrt[6]{y^2}}{y\left(1+\sqrt[3]{y^2}\right)}\, dy =$$

(A) $\frac{3}{4}\sqrt[3]{y^4} + 3\,\mathrm{Tan}^{-1}\left(\sqrt[3]{y}\right) + C$
(B) $\frac{3}{2}y^{2/3} + 6\,\mathrm{Tan}^{-1}\left(\sqrt[6]{y^2}\right) + C$
(C) $\frac{2}{3\sqrt[3]{y^2}} + 6\log(1+y^2) + C$
(D) $\frac{3}{1+y} + \mathrm{Tan}^{-1}\left(\sqrt[3]{y^2}\right) + C$

Answer: (A) $\frac{3}{4}\sqrt[3]{y^4} + 3\,\mathrm{Tan}^{-1}\left(\sqrt[3]{y}\right) + C$ · Official TGCHE final key

Q468 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

For $k \in (1, \infty)$, $\int \frac{1}{1+k\cos x}\,dx =$

(A) $\frac{2}{\sqrt{1+k^2}}\mathrm{Tan}^{-1}\left(\sqrt{\frac{1-k}{1+k}}\tan\frac{x}{2}\right)+C$

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

(C) $\frac{1}{\sqrt{k^2+1}}\log^{-1}\left(\frac{\sqrt{k+1}+\sqrt{k-1}\tan\frac{x}{2}}{\sqrt{k+1}-\sqrt{k-1}\tan\frac{x}{2}}\right)+C$

(D) $\frac{1}{\sqrt{k^2-1}}\mathrm{Tan}^{-1}\left(\frac{\sqrt{k-1}\cos\frac{x}{2}+\sqrt{k-1}\sin\frac{x}{2}}{\sqrt{k+1}\cos\frac{x}{2}-\sqrt{k-1}\sin\frac{x}{2}}\right)+C$

Answer: (B) $\frac{1}{\sqrt{k^2-1}}\log\left(\frac{\sqrt{k+1}+\sqrt{k-1}\tan\frac{x}{2}}{\sqrt{k+1}-\sqrt{k-1}\tan\frac{x}{2}}\right)+C$ · Checked by our team

Q469 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

$\int e^{-3x}\left(x^2+\sin 4x\right)dx =$

(A) $-e^{-3x}\left(\frac{x^2}{3}+\frac{2x}{9}+\frac{2}{27}+\frac{3}{25}\sin 4x+\frac{4}{25}\cos 4x\right)+C$

(B) $-e^{-3x}\left(\frac{x^2}{3}-\frac{2x}{9}+\frac{2}{27}+\frac{3}{25}\sin 4x+\frac{4}{25}\cos 4x\right)+C$

(C) $-e^{-3x}\left(\frac{x^2}{3}+\frac{2x}{9}+\frac{2}{27}+\frac{3}{25}\sin 4x-\frac{4}{25}\cos 4x\right)+C$

(D) $-e^{-3x}\left(\frac{x^2}{3}-\frac{2x}{9}+\frac{2}{27}+\frac{3}{25}\sin 4x-\frac{4}{25}\cos 4x\right)+C$

Answer: (A) $-e^{-3x}\left(\frac{x^2}{3}+\frac{2x}{9}+\frac{2}{27}+\frac{3}{25}\sin 4x+\frac{4}{25}\cos 4x\right)+C$ · Official TGCHE final key

Q470 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

If $\int \frac{2x^{12}+5x^9}{\left(1+x^3+x^5\right)^3}\,dx = \frac{x^m}{\ell\left(1+x^3+x^5\right)^r}+C$ then $\frac{m-\ell}{r} =$

(A) 3

(B) 4

(C) 5

(D) 6

Answer: (B) 4 · Official TGCHE final key

Q471 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

For $x \in \left(\frac{3\pi}{4}, \pi\right)$, $\int\left(\sqrt{1+\sin 2x}+\sqrt{1-\sin 2x}\right)dx =$

(A) $-2\cos x + C$

(B) $2\sin x + C$

(C) $-2\sin x + C$

(D) $2\cos x + C$

Answer: (C) $-2\sin x + C$ · Checked by our team

Q472 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

If $\int \frac{x^2(x\sec^2 x+\tan x)}{(x\tan x+1)^2}dx = A\log(|x\sin x+\cos x|) + B\frac{f(x)}{(x\tan x+1)} + C$ then $f(A+B) =$

(A) 1

(B) 0

(C) -1

(D) 2

Answer: (A) 1 · Official TGCHE final key

Q473 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

If $\int x^3(\log x)^2 dx = x^4\left[A(\log x)^2 + B(\log x) + C\log e\right] + K$, then $A+B+C =$

(A) $\frac{7}{24}$

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

(C) $\frac{3}{14}$

(D) $\frac{5}{32}$

Answer: (D) $\frac{5}{32}$ · Official TGCHE final key

Q474 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

If $\int \frac{9x+15}{x^3-6x-9}dx = A\log|g(x)| + B\log|f(x)| + C$, then $\frac{(A-B)g(4)}{f(-1)} =$

(A) 3

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

(C) 1

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

Answer: (A) 3 · Official TGCHE final key

Q475 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

$\int \frac{\mathrm{Tan}^{-1}x}{x^3}dx =$

EdLoop EAPCET

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

Answer: (C) $\frac{-1}{2x}-\left(\frac{1}{2}+\frac{1}{2x^2}\right)\text{Tan}^{-1}x+C$ · Official TGCHE final key

Q476 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

If $\int\frac{1-(\cot x)^{2019}}{\tan x+(\cot x)^{2020}}dx=\frac{1}{n}\ln\left|(f(x))^n+(g(x))^n\right|+c$, then the value of $n\left[(f(x))^4+(g(x))^4\right]_{x=\frac{\pi}{3}}=$

(A) $\frac{10105}{16}$
(B) $\frac{10012}{15}$
(C) $\frac{20210}{9}$
(D) $\frac{10105}{8}$

Answer: (D) $\frac{10105}{8}$ · Official TGCHE final key

Q477 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

If $x\neq-1$ and $\int\frac{(x^3+x^2-x-1)}{(x^5+x^4+3x^3+3x^2+x+1)\text{Tan}^{-1}\left(\frac{x^2+1}{x}\right)}dx=A\log(f(x))+C$ then $A-\tan(f(2))=$

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

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

Q478 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

If $I_n=\int x^n\sin x\,dx$ and $I_6-360I_2=f(x)\cos x+g(x)\sin x$, then $f(1)+g(1)=$

(A) -85
(B) 0
(C) -53
(D) 75

Answer: (A) -85 · Official TGCHE final key

Q479 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

If $\int\frac{(x-1)\,dx}{(x+1)\sqrt{x^3+x^2+x}}=f(x)+C$, then $f(1)=$

EdLoop EAPCET

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

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

Q480 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

If $\int \frac{\cos x}{\sqrt{4\sin^2 x + 4\sin x + 5}}\,dx = \frac{1}{2}\mathrm{Sinh}^{-1}(f(x)) + C$ then $2f(x) =$

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

Answer: (B) $2\sin x + 1$ · Official TGCHE final key

Q481 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

If $\int \frac{a\cos x - 2\sin x}{b\sin x + 5\cos x}\,dx = \frac{7}{41}x + \frac{22}{41}\log|b\sin x + 5\cos x| + C$, $(a > 0,\ b > 0)$ then $\int \frac{dx}{b + a\cos x} =$

(A) $\frac{2}{3}\log\left(\frac{3\tan\frac{x}{2} + 4 - \sqrt{3}}{3\tan\frac{x}{2} + 4 + \sqrt{3}}\right) + C$
(B) $\frac{2}{\sqrt{7}}\mathrm{Tan}^{-1}\left(\frac{\tan\frac{x}{2}}{\sqrt{7}}\right) + C$
(C) $\frac{2}{\sqrt{7}}\log\left(\frac{\sqrt{7} - \tan\frac{x}{2}}{\sqrt{7} + \tan\frac{x}{2}}\right) + C$
(D) $2\,\mathrm{Sinh}^{-1}\left(\frac{2\tan\frac{x}{2}}{1 + \tan^2\frac{x}{2}}\right) + C$

Answer: (B) $\frac{2}{\sqrt{7}}\mathrm{Tan}^{-1}\left(\frac{\tan\frac{x}{2}}{\sqrt{7}}\right) + C$ · Official TGCHE final key

Q482 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

If $\int (3x+2)\sqrt{2x^2 + 3x + 4}\,dx = f(x)\cdot\sqrt{2x^2 + 3x + 4} + A\,\mathrm{Sinh}^{-1}\left(\frac{4x+3}{\sqrt{23}}\right) + C$, then the ordered pair $(f(1), A) =$

EdLoop EAPCET

(A) $\left(\frac{73}{8}, \frac{23}{64\sqrt{2}}\right)$
(B) $\left(\frac{137}{32}, \frac{-23}{64\sqrt{2}}\right)$
(C) $\left(\frac{15}{8}, \frac{-23}{16\sqrt{2}}\right)$
(D) $\left(\frac{49}{32}, \frac{23}{16\sqrt{2}}\right)$

Answer: (B) $\left(\frac{137}{32}, \frac{-23}{64\sqrt{2}}\right)$ · Official TGCHE final key

Q483 TS EAMCET 2019 · 6 May · Shift 1 MCQ

$$\int \frac{dx}{4\sin x + 3\cos x} =$$

(A) $\frac{1}{5}\log\left|\sec\left(x - \mathrm{Tan}^{-1}\frac{4}{3}\right)\right| + c$
(B) $\frac{1}{5}\log\left|\tan\left(\frac{\pi}{4} - x + \mathrm{Tan}^{-1}\frac{4}{3}\right)\right| + c$
(C) $\frac{1}{5}\log\left|\sec\left(x - \mathrm{Tan}^{-1}\frac{4}{3}\right) + \tan\left(x - \mathrm{Tan}^{-1}\frac{4}{3}\right)\right| + c$
(D) $\frac{1}{5}\log\left|\mathrm{cosec}\left(x - \mathrm{Tan}^{-1}\frac{4}{3}\right) + \cot\left(x - \mathrm{Tan}^{-1}\frac{4}{3}\right)\right| + c$

Answer: (C) $\frac{1}{5}\log\left|\sec\left(x - \mathrm{Tan}^{-1}\frac{4}{3}\right) + \tan\left(x - \mathrm{Tan}^{-1}\frac{4}{3}\right)\right| + c$ · Official TGCHE final key

Q484 TS EAMCET 2019 · 6 May · Shift 1 MCQ

If $\int \frac{\sqrt{2}\,dx}{\cos x\sqrt{\sin 2x}} = f(x) + c$, then $f(x) =$

(A) $2\sqrt{\sec x}$
(B) $\sqrt{\tan x}$
(C) $2\sqrt{\tan x}$
(D) $2\sqrt{2}\sqrt{\tan x}$

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

Q485 TS EAMCET 2019 · 6 May · Shift 1 MCQ

$$\int e^x \left(\frac{\sec^2 x + \tan x - \cot x}{\sin x}\right) dx =$$

EdLoop EAPCET

(A) $e^x(\operatorname{cosec} x + \cot x) + c$

(B) $e^x\left(\dfrac{\sec^2 x + \tan x}{\sin x}\right) + c$

(C) $e^x\left(\dfrac{1+\tan^2 x}{\sin x}\right) + c$

(D) $e^x(\operatorname{cosec} x + \sec x) + c$

Answer: (D) $e^x(\operatorname{cosec} x + \sec x) + c$ · Official TGCHE final key

Q486 TS EAMCET 2019 · 6 May · Shift 1 MCQ

$\int \dfrac{3\sin x + 5\cos x + 4}{\sin x + \cos x + 2} dx =$

(A) $\log(\sin x + \cos x + 2) + 4x - 4\,\mathrm{Tan}^{-1}\left(1 + \tan\dfrac{x}{2}\right) + c$

(B) $\log(\sin x + \cos x + 2) + 4x - 4\sqrt{2}\,\mathrm{Tan}^{-1}\left(\dfrac{1+\tan\frac{x}{2}}{\sqrt{2}}\right) + c$

(C) $4\log(\sin x + \cos x + 2) + x - 4\sqrt{2}\,\mathrm{Tan}^{-1}\left(\dfrac{1+\tan\frac{x}{2}}{\sqrt{2}}\right) + c$

(D) $4\log(\sin x + \cos x + 2) + 4x - 4\sqrt{2}\,\mathrm{Tan}^{-1}\left(\dfrac{1-\tan\frac{x}{2}}{\sqrt{2}}\right) + c$

Answer: (B) $\log(\sin x + \cos x + 2) + 4x - 4\sqrt{2}\,\mathrm{Tan}^{-1}\left(\dfrac{1+\tan\frac{x}{2}}{\sqrt{2}}\right) + c$ · Official TGCHE final key

Q487 TS EAMCET 2019 · 4 May · Shift 1 MCQ

$\int \frac{dx}{(1+x)\sqrt{8+7x-x^2}} =$

(A) $-\frac{2}{9}\sqrt{\frac{8-x}{1+x}} + c$

(B) $-\frac{1}{9}\sqrt{\frac{1+x}{8-x}} + c$

(C) $-\frac{2}{9}\sqrt{\frac{1+x}{8-x}} + c$

(D) $\frac{2}{9}\sqrt{\frac{8+x}{1+x}} + c$

Answer: (A) $-\frac{2}{9}\sqrt{\frac{8-x}{1+x}} + c$ · Official TGCHE final key

Q488 TS EAMCET 2019 · 4 May · Shift 1 MCQ

$\int \frac{x^3+2x}{x^4+4} dx =$

(A) $\frac{1}{2}\left[\mathrm{Tan}^{-1}\left(\frac{x^2}{2}\right) + \log\left(\frac{\sqrt{x^4+4}}{2}\right)\right] + c$

(B) $\frac{1}{2}\mathrm{Tan}^{-1}\left(\frac{x^2+2}{2x}\right) + c$

(C) $\frac{1}{2}\left[\mathrm{Tan}^{-1}\left(\frac{x^2}{2}\right) - \log\left(\frac{\sqrt{x^4+4}}{4}\right)\right] + c$

(D) $\frac{1}{\sqrt{2}}\mathrm{Tan}^{-1}\left(\frac{x^2+2}{\sqrt{2}x}\right) + c$

Answer: (A) $\frac{1}{2}\left[\mathrm{Tan}^{-1}\left(\frac{x^2}{2}\right) + \log\left(\frac{\sqrt{x^4+4}}{2}\right)\right] + c$ · Official TGCHE final key

EdLoop EAPCET

Q489 TS EAMCET 2019 · 4 May · Shift 1 MCQ

$\int \frac{x+1}{x(1+xe^x)}dx =$

(A) $\log\left|\frac{1+xe^x}{x+1}\right| + c$

(B) $\log\left|\frac{xe^x}{1+xe^x}\right| + c$

(C) $\log\left|\frac{(x+1)e^x}{1+e^x}\right| + c$

(D) $\log\left|\frac{xe^x}{x+e^x}\right| + c$

Answer: (B) $\log\left|\frac{xe^x}{1+xe^x}\right| + c$ · Official TGCHE final key

Q490 TS EAMCET 2019 · 4 May · Shift 1 MCQ

$\int \sec^5 x\, dx =$

(A) $\frac{1}{4}\sec x\tan^3 x + \frac{5}{8}\sec x\tan x + \frac{3}{4}(\log\sec x + \tan x) + c$

(B) $\frac{1}{4}\tan^3 x\sec x + \frac{5}{8}\sec x\tan x + \frac{3}{8}\log(\sec x + \tan x) + c$

(C) $\frac{1}{4}\sec^2 x\tan x + \frac{3}{8}\sec x\tan x + \frac{3}{4}\log(\sec x + \tan x) + c$

(D) $\frac{1}{4}\sec x\tan^3 x + \frac{11}{8}\sec x\tan x + \frac{3}{4}\log(\sec x + \tan x) + c$

Answer: (B) $\frac{1}{4}\tan^3 x\sec x + \frac{5}{8}\sec x\tan x + \frac{3}{8}\log(\sec x + \tan x) + c$ · Official TGCHE final key

Q491 TS EAMCET 2019 · 4 May · Shift 2 MCQ

$\int \sqrt{1 + 2\cot x(\cot x + \operatorname{cosec} x)}\, dx =$

(A) $2\log\left|\sin\frac{x}{2}\right| + c$

(B) $2\log\left|\cos\frac{x}{2}\right| + c$

(C) $\log\left|\sin\frac{x}{2} + \cos\frac{x}{2}\right| + c$

(D) $2\log|\sin x + \cos x| + c$

Answer: (A) $2\log\left|\sin\frac{x}{2}\right| + c$ · Official TGCHE final key

Q492 TS EAMCET 2019 · 4 May · Shift 2 MCQ

If $\int e^{\alpha x}\left(\frac{1-\beta\sin x}{1-\cos x}\right)dx = -e^x\cot\frac{x}{2} + c$, then $\frac{\alpha^2+\beta^2}{2\alpha\beta} =$

(A) -1

(B) 1

(C) 2

(D) -2

Answer: (B) 1 · Official TGCHE final key

Q493 TS EAMCET 2019 · 4 May · Shift 2 MCQ

$\int \frac{2x^3-4x^2-x-3}{x^2-2x-3}\, dx =$

(A) $\frac{7}{2}\log|x-1|+\frac{3}{2}\log|x+3|+c$
(B) $2\log|x-1|+\frac{7}{2}\log|x-3|+c$
(C) $2x+\frac{1}{2}\log|x+1|+\frac{3}{4}\log|x-3|+c$
(D) $x^2+2\log|x+1|+3\log|x-3|+c$

Answer: (D) $x^2+2\log|x+1|+3\log|x-3|+c$ · Official TGCHE final key

Q494 TS EAMCET 2019 · 4 May · Shift 2 MCQ

$\int \text{cosec}^5 x\,dx =$

(A) $\frac{\text{cosec}\,x\cot^3 x}{4}-\frac{5}{8}\text{cosec}\,x\cot x+\frac{3}{8}\log\left|\tan\frac{x}{2}\right|+c$
(B) $-\frac{\text{cosec}\,x\cot^3 x}{4}-\frac{5}{8}\text{cosec}\,x\cot x+\frac{3}{8}\log\left|\tan\frac{x}{2}\right|+c$
(C) $-\frac{\text{cosec}^3 x\cot x}{4}-\frac{3}{8}\text{cosec}\,x\cot x+\frac{3}{8}\log\left|\tan\frac{x}{2}\right|+c$
(D) $-\frac{\text{cosec}^3 x\cot x}{4}+\frac{3}{8}\text{cosec}\,x\cot x-\frac{3}{8}\log\left|\tan\frac{x}{2}\right|+c$

Answer: (C) $-\frac{\text{cosec}^3 x\cot x}{4}-\frac{3}{8}\text{cosec}\,x\cot x+\frac{3}{8}\log\left|\tan\frac{x}{2}\right|+c$ · Official TGCHE final key

Q495 TS EAMCET 2019 · 3 May · Shift 1 MCQ

If $\int\frac{\cos x+x}{1+\sin x}dx=f(x)+\int\frac{3\cos\frac{x}{2}-\sin\frac{x}{2}}{\cos\frac{x}{2}+\sin\frac{x}{2}}dx+c$, then $f(x)=$

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

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

Q496 TS EAMCET 2019 · 3 May · Shift 1 MCQ

$\int\frac{\sqrt{\cos 2x}}{\sin x}dx=$

(A) $\frac{1}{2\sqrt{2}}\log\left|\frac{\sqrt{2}+\sqrt{1-\tan^2 x}}{\sqrt{2}-\sqrt{1-\tan^2 x}}\right|-\frac{1}{2}\log\left|\frac{1-\sqrt{1-\tan^2 x}}{1+\sqrt{1-\tan^2 x}}\right|+c$
(B) $\frac{1}{\sqrt{2}}\log\left|\frac{\sqrt{2}+\sqrt{1-\tan^2 x}}{\sqrt{2}-\sqrt{1-\tan^2 x}}\right|-\frac{1}{2}\log\left|\frac{1+\sqrt{1-\tan^2 x}}{1-\sqrt{1-\tan^2 x}}\right|+c$
(C) $\frac{1}{4\sqrt{2}}\log\left|\frac{\sqrt{2}-\sqrt{1-\tan^2 x}}{\sqrt{2}+\sqrt{1-\tan^2 x}}\right|+\frac{1}{2}\log\left|\frac{1-\sqrt{1-\tan^2 x}}{1+\sqrt{1-\tan^2 x}}\right|+c$
(D) $\frac{1}{4\sqrt{2}}\log\left|\frac{2-\sqrt{1-\tan^2 x}}{2+\sqrt{1-\tan^2 x}}\right|+\frac{1}{2\sqrt{2}}\log\left|\frac{1-\sqrt{1-\tan^2 x}}{1+\sqrt{1-\tan^2 x}}\right|+c$

Answer: (B) $\frac{1}{\sqrt{2}}\log\left|\frac{\sqrt{2}+\sqrt{1-\tan^2 x}}{\sqrt{2}-\sqrt{1-\tan^2 x}}\right|-\frac{1}{2}\log\left|\frac{1+\sqrt{1-\tan^2 x}}{1-\sqrt{1-\tan^2 x}}\right|+c$ · Official TGCHE final key

Q497 TS EAMCET 2019 · 3 May · Shift 1 MCQ

If $\int\frac{(2x+3)}{x(x+1)(x+2)(x+3)+1}dx=-\frac{1}{px^2+qx+r}+c$ then $\frac{3p-q}{r}=$

(A) 0

(B) 1

(C) 2

(D) -1

Answer: (A) 0 · Official TGCHE final key

Q498 TS EAMCET 2019 · 3 May · Shift 1 MCQ

$\int (\log x)^2\, dx =$

(A) $x \log x - 2x \log x + c$

(B) $x \log x + 2x \log x + c$

(C) $x(\log x)^2 - 2x(\log x - 1) + c$

(D) $x(\log x)^2 + 2x(\log x - 1) + c$

Answer: (C) $x(\log x)^2 - 2x(\log x - 1) + c$ · Official TGCHE final key

Q499 TS EAMCET 2019 · 3 May · Shift 2 MCQ

$\int \text{Sin}^{-1}\sqrt{\dfrac{x}{a+x}}\, dx =$

(A) $\text{cosec}\left(\sqrt{\dfrac{x}{a+x}}\right)\left(\dfrac{x}{a}\right) + ax + c$

(B) $\text{Cos}^{-1}\left(\sqrt{\dfrac{x}{a}}\right)(a-x)^2 - \sqrt{ax} + c$

(C) $\text{Cos}^{-1}\left(\sqrt{\dfrac{x}{a}}\right)(a+x) - \sqrt{ax} + c$

(D) $\text{Tan}^{-1}\left(\sqrt{\dfrac{x}{a}}\right)(a+x) - \sqrt{ax} + c$

Answer: (D) $\text{Tan}^{-1}\left(\sqrt{\dfrac{x}{a}}\right)(a+x) - \sqrt{ax} + c$ · Official TGCHE final key

Q500 TS EAMCET 2019 · 3 May · Shift 2 MCQ

$\int \dfrac{x^2 - 1}{x^3\sqrt{2x^4 - 2x^2 + 1}}\, dx =$

(A) $\sqrt{2x^2 + 2 + \dfrac{3}{x^2}} + c$

(B) $\sqrt{2x^2 - \dfrac{1}{x^2} + 2} + c$

(C) $\sqrt{2x^2 + x - 2} + c$

(D) $\dfrac{1}{2}\sqrt{2 - \dfrac{2}{x^2} + \dfrac{1}{x^4}} + c$

Answer: (D) $\dfrac{1}{2}\sqrt{2 - \dfrac{2}{x^2} + \dfrac{1}{x^4}} + c$ · Official TGCHE final key

Q501 TS EAMCET 2019 · 3 May · Shift 2 MCQ

$\int (\log(\sin x) + x\cot x)\,dx =$

(A) $x\log(\sin x) + c$

(B) $x^2\log(\sin x) + c$

(C) $-x\log(\sin x) + c$

(D) $-x^2\log(\sin x) + c$

Answer: (A) $x\log(\sin x) + c$ · Official TGCHE final key

Q502 TS EAMCET 2019 · 3 May · Shift 2 MCQ

If $\int \frac{2x^2}{(2x^2+\alpha)(x^2+5)}\,dx = \frac{\sqrt{5}}{3}\text{Tan}^{-1}\frac{x}{\sqrt{5}} - \frac{\sqrt{2}}{3}\text{Tan}^{-1}\frac{x}{\sqrt{2}} + c$, then $\alpha =$

(A) 1

(B) 2

(C) 3

(D) 4

Answer: (D) 4 · Official TGCHE final key

Q503 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

If $\int \frac{\cos 4x + 1}{\cot x - \tan x}\,dx = k\cos 4x + c$, then k is

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

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

(C) $-\frac{1}{8}$

(D) -1

Answer: (C) $-\frac{1}{8}$ · Official APSCHE final key

Q504 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

$\int e^{2x}\left[\cos(3x+4) + 5x^2\right]dx =$

(A) $e^{2x}\left[\frac{2}{13}\cos(3x+4)+\frac{3}{13}\sin(3x+4)+\frac{5x^2}{2}-\frac{5x}{2}+\frac{5}{4}\right]+c$

(B) $e^{2x}\left[\frac{2}{13}\cos(3x+4)-\frac{3}{13}\sin(3x+4)+\frac{5x^2}{2}+\frac{5x}{2}+\frac{5}{4}\right]+c$

(C) $e^{2x}\left[\frac{2}{13}\cos(3x+4)-\frac{3}{13}\sin(3x+4)-\frac{5x^2}{2}-\frac{5x}{2}-\frac{5}{4}\right]+c$

(D) $e^{2x}\left[\frac{2}{13}\cos(3x+4)-\frac{3}{13}\sin(3x+4)+\frac{5x^2}{2}-\frac{5x}{2}+\frac{5}{4}\right]+c$

Answer: (A) $e^{2x}\left[\frac{2}{13}\cos(3x+4)+\frac{3}{13}\sin(3x+4)+\frac{5x^2}{2}-\frac{5x}{2}+\frac{5}{4}\right]+c$ · Official APSCHE final key

Q505 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

If $\int \frac{5\cot x+1}{(\cot x-1)(\cot x-2)\sin^2 x}\,dx = 6\log|f(x)|+11\log|g(x)|+c$, then $(f(x),g(x))=$

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

(B) $((\cot x-1)^{-1},\ \cot x-2)$

(C) $((\cot x-1)^{-1},\ (\cot x-2)^{-1})$

(D) $(\cot x-1,\ \cot x+2)$

Answer: (A) $(\cot x-1,\ (\cot x-2)^{-1})$ · Official APSCHE final key

Q506 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

If $I_{m,n}=\int e^{mx}\cdot x^n\,dx$, then $I_{m,n}+\frac{n}{m}I_{m,n-1}=$

(A) $x^n\cdot e^{mx}+c$

(B) $\frac{x^n e^{mx}}{n}+c$

(C) $\frac{x^n\cdot e^{mx}}{m}+c$

(D) $\frac{-x^n\cdot e^{mx}}{m}+c$

Answer: (C) $\frac{x^n\cdot e^{mx}}{m}+c$ · Official APSCHE final key

Q507 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

$\int \frac{x}{\sqrt{x+1}+\sqrt{x-1}}\,dx = A(x)(x+1)^{\frac{3}{2}}+B(x)(x-1)^{\frac{3}{2}}+C$, then $A(x)+B(x)=$

(A) $\frac{4}{15}$

(B) $-\frac{4}{15}$

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

(D) $-\frac{2x}{5}$

Answer: (B) $-\frac{4}{15}$ · Official APSCHE final key

Q508 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

$\int \frac{x\cdot\log x}{\left(\sqrt{x^2-1}\right)^3}\,dx =$

(A) $\text{Sec}^{-1}x + \frac{\log x}{\sqrt{x^2-1}} + c$

(B) $\text{Sec}^{-1}x - \frac{\log x}{\sqrt{x^2-1}} + c$

(C) $\frac{\log x}{\sqrt{x^2-1}} - \text{Sec}^{-1}x + c$

(D) $\frac{-\log x}{\sqrt{x^2-1}} - \text{Sec}^{-1}x + c$

Answer: (B) $\text{Sec}^{-1}x - \frac{\log x}{\sqrt{x^2-1}} + c$ · Official APSCHE final key

Q509 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

$\int \frac{\cos 2x\cdot\sin 4x}{\cos^4 x(1+\cos^2 2x)}\,dx =$

(A) $\log\left|\frac{1+\cos 2x}{1+\cos^2 2x}\right| + \sec^2 x + c$

(B) $\log\frac{(1+\cos 2x)^2}{(1+\cos^2 x)} + \sec x + c$

(C) $\log\frac{(1+\cos 2x)^2}{(1+\cos^2 2x)} + \sec^2 x + c$

(D) $\log\frac{1+\cos^2 2x}{(1+\cos 2x)^2} + \sec x + c$

Answer: (C) $\log\frac{(1+\cos 2x)^2}{(1+\cos^2 2x)} + \sec^2 x + c$ · Official APSCHE final key

Q510 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

$$\int \frac{\sin^8 x - \cos^8 x}{1 - 2\sin^2 x + 2\sin^4 x}\,dx =$$

(A) $-\frac{1}{2}\sin 2x + c$

(B) $-\sin 2x + c$

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

(D) $\sin 2x + c$

Answer: (A) $-\frac{1}{2}\sin 2x + c$ · Official APSCHE final key

Q511 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

$$\int \frac{2x^{12} + 5x^9}{\left(1 + x^3 + x^5\right)^3}\,dx =$$

(A) $\frac{x^8}{(1+x^3+x^5)^2} + c$

(B) $\frac{x^{10}}{(1+x^3+x^5)^2} + c$

(C) $\frac{x^{10}}{2(1+x^3+x^5)^2} + c$

(D) $\frac{x^8}{2(1+x^3+x^5)^2} + c$

Answer: (C) $\frac{x^{10}}{2(1+x^3+x^5)^2} + c$ · Official APSCHE final key

EdLoop EAPCET

Q512 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

$\int \frac{x^2+\cos^2 x}{(1+x^2)\sin^2 x}\,dx =$

(A) $\cot x + \mathrm{Tan}^{-1}x + c$

(B) $\cot x - \mathrm{Tan}^{-1}x + c$

(C) $-\cot x + \mathrm{Tan}^{-1}x + c$

(D) $-\cot x - \mathrm{Tan}^{-1}x + c$

Answer: (D) $-\cot x - \mathrm{Tan}^{-1}x + c$ · Official APSCHE final key

Q513 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

If $I_n = \int \sin^n x\,dx$ for $n = 1, 2, 3, \ldots$, then $8I_8 + 7(I_7 - I_6) - 6I_5 =$

(A) $-\sin^6 x \cos x(1+\sin x) + c$

(B) $\sin^8 x \cos x + \sin^5 x \cos x + c$

(C) $-\sin^7 x \cos x(1-\sin x) + c$

(D) $-\cos^7 x \sin x(1+\cos x) + c$

Answer: (A) $-\sin^6 x \cos x(1+\sin x) + c$ · Official APSCHE final key

Q514 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

If $\int \cos x \cdot \cos 2x \cdot \cos 5x\,dx = A\sin 2x + B\sin 4x + C\sin 6x + D\sin 8x + k$ (where k is the arbitrary constant of integration), then $\frac{1}{B} + \frac{1}{C} =$

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

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

(C) 1

(D) 0

Answer: (B) $\frac{1}{A} + \frac{1}{D}$ · Official APSCHE final key

Q515 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

If $\int e^x \left(\frac{x+2}{x+4}\right)^2 dx = f(x) +$ arbitrary constant, then $f(x) =$

(A) $\frac{xe^x}{x+4}$

(B) $\frac{e^x}{x+4}$

(C) $\frac{xe^x}{(x+4)^2}$

(D) $\frac{e^x}{(x+4)^2}$

Answer: (A) $\frac{xe^x}{x+4}$ · Official APSCHE final key

Q516 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

$\int \frac{dx}{\sin x+\sin 2x} =$

(A) $\frac{1}{2}\log_e|1+\cos x|+\frac{1}{6}\log_e|1-\cos x|-\frac{2}{3}\log_e|1+2\cos x|+c$

(B) $\frac{1}{3}\log_e|1+\cos x|-\frac{2}{3}\log_e|1-\cos x|+\frac{1}{2}\log_e|1+2\cos x|+c$

(C) $\frac{1}{2}\log_e|1+\sin x|-\frac{1}{3}\log_e|1-\sin x|-\frac{1}{3}\log_e|1+\cos x|+c$

(D) $\frac{1}{3}\log_e|1-\sin x|+\frac{1}{2}\log_e|1+\cos x|-\frac{2}{3}\log_e|1-2\cos x|+c$

Answer: (A) $\frac{1}{2}\log_e|1+\cos x|+\frac{1}{6}\log_e|1-\cos x|-\frac{2}{3}\log_e|1+2\cos x|+c$ · Official APSCHE final key

Q517 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

If $I_n=\int \frac{\sin nx}{\sin x}dx$ for $n=1,2,3,\ldots$, then $I_6=$

(A) $\frac{3}{5}\sin 3x+\frac{8}{3}\sin^5 x-\sin x+c$

(B) $\frac{2}{5}\sin 5x-\frac{5}{3}\sin^3 x-2\sin x+c$

(C) $\frac{2}{3}\sin 5x-\frac{8}{3}\sin^5 x+4\sin x+c$

(D) $\frac{2}{5}\sin 5x-\frac{8}{3}\sin^3 x+4\sin x+c$

Answer: (D) $\frac{2}{5}\sin 5x-\frac{8}{3}\sin^3 x+4\sin x+c$ · Official APSCHE final key

Q518 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

$\int \frac{x+\sin x}{1+\cos x}\,dx =$

(A) $\log_e(1+\cos x)+c$

(B) $x\sin^2\frac{x}{2}+c$

(C) $\tan\frac{x}{2}+c$

(D) $x\tan\frac{x}{2}+c$

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

Q519 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

$\int x^2\left[\sqrt{2}\sin\left(\frac{\pi}{4}+x\right)+e^x\right]dx =$

(A) $(x^2+2x-2)\sin x+(-x^2+2x+2)\cos x+(x^2-2x+2)e^x+c$

(B) $(-x^2+2x-2)\sin x+(x^2+2x-2)\cos x+(x^2-2x+2)e^x+c$

(C) $(x^2+2x+2)\sin x+(-x^2-2x-2)\cos x+(x^2-2x+2)e^x+c$

(D) $(x^2-2x-2)\sin x+(-x^2+2x-2)\cos x+(x^2-2x+2)e^x+c$

Answer: (A) $(x^2+2x-2)\sin x+(-x^2+2x+2)\cos x+(x^2-2x+2)e^x+c$ · Official APSCHE final key

Q520 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

$\int \frac{dx}{(x+1)^2(x^2+1)} =$

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

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

(C) $\frac{1}{2}\log_e \sqrt{x+1} - \frac{1}{4}\log_e \sqrt{x^2+1} + \frac{1}{2(x+1)} + c$

(D) $\frac{1}{4}\log_e \sqrt{x+1} + \frac{1}{2}\log_e \sqrt{x^2+1} + \frac{1}{x+1} + c$

Answer: (B) $\log_e \sqrt{x+1} - \frac{1}{2}\log_e \sqrt{x^2+1} - \frac{1}{2(x+1)} + c$ · Official APSCHE final key

Q521 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

For $n \geq 2$, if $I_n = \int (\sin x + \cos x)^n \, dx$ then $nI_n - 2(n-1)I_{n-2} =$

(A) $(\sin x + \cos x)^{n+1}(\sin x - \cos x) + c$

(B) $(\sin x + \cos x)^{n}(\sin x - \cos x) + c$

(C) $(\sin x + \cos x)^{n-1}(\sin x - \cos x) + c$

(D) $(\sin x - \cos x)^{n-1}(\sin x + \cos x) + c$

Answer: (C) $(\sin x + \cos x)^{n-1}(\sin x - \cos x) + c$ · Official APSCHE final key

Q522 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

$$\int \frac{x-1}{(x+1)\sqrt{x^3+x^2+x}}\,dx =$$

(A) $2\,\mathrm{Tan}^{-1}\left(\sqrt{\frac{1+x+x^2}{x}}\right) + c$

(B) $\mathrm{Tan}^{-1}\left(\sqrt{\frac{1+x+x^2}{x}}\right) + c$

(C) $\mathrm{Tan}^{-1}\left(\sqrt{\frac{x}{1+x+x^2}}\right) + c$

(D) $\mathrm{Tan}^{-1}\left(\sqrt{\frac{1+x^2}{x}}\right) + c$

Answer: (A) $2\,\mathrm{Tan}^{-1}\left(\sqrt{\frac{1+x+x^2}{x}}\right) + c$ · Official APSCHE final key

Q523 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

If $I(x) = \int x^2 (\log x)^2 dx$ and $I(1) = 0$, then $I(x) =$

(A) $\frac{x^3}{18}\left[8(\log x)^2-3\log x\right]+\frac{7}{18}$

(B) $\frac{x^3}{27}\left[9(\log x)^2+6\log x\right]-\frac{2}{27}$

(C) $\frac{x^3}{27}\left[9(\log x)^2-6\log x+2\right]-\frac{2}{27}$

(D) $\frac{x^3}{27}\left[9(\log x)^2-6\log x-2\right]+\frac{2}{27}$

Answer: (C) $\frac{x^3}{27}\left[9(\log x)^2-6\log x+2\right]-\frac{2}{27}$ · Official APSCHE final key

Q524 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

$$\int \frac{x^5dx}{(x^2+x+1)(x^6+1)(x^4-x^3+x-1)}=$$

(A) $\log_e\left|\frac{x^6-1}{x^6+1}\right|+c$

(B) $\frac{1}{12}\log_e\left|\frac{x^6-1}{x^6+1}\right|+c$

(C) $\frac{1}{12}\log_e\left|\frac{x^4+1}{x^4-1}\right|+c$

(D) $\log_e\left|\frac{x^8+4}{x^6-1}\right|+c$

Answer: (B) $\frac{1}{12}\log_e\left|\frac{x^6-1}{x^6+1}\right|+c$ · Official APSCHE final key

Q525 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

$$\int \frac{dx}{x+\sqrt{x-1}}=$$

(A) $\log_e|x+\sqrt{x-1}|-\frac{1}{\sqrt{3}}\mathrm{Tan}^{-1}\left(\frac{2\sqrt{x-1}+1}{\sqrt{3}}\right)+c$

(B) $\frac{1}{\sqrt{3}}\log_e|x+\sqrt{x-1}|-\mathrm{Tan}^{-1}\left(\frac{2\sqrt{x-1}+1}{\sqrt{3}}\right)+c$

(C) $\frac{2}{\sqrt{3}}\log_e|x+\sqrt{x-1}|-\mathrm{Tan}^{-1}\left(\frac{2\sqrt{x-1}+1}{\sqrt{3}}\right)+c$

(D) $\log_e|x+\sqrt{x-1}|-\frac{2}{\sqrt{3}}\mathrm{Tan}^{-1}\left(\frac{2\sqrt{x-1}+1}{\sqrt{3}}\right)+c$

Answer: (D) $\log_e|x+\sqrt{x-1}|-\frac{2}{\sqrt{3}}\mathrm{Tan}^{-1}\left(\frac{2\sqrt{x-1}+1}{\sqrt{3}}\right)+c$ · Official APSCHE final key

Q526 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

$$\int_{\log_e 2}^{x}\frac{dt}{\sqrt{e^t-1}}=\frac{\pi}{6}\Rightarrow x=$$

(A) $2 \cdot \log_e 2$

(B) $3 \cdot \log_e 2$

(C) $4 \cdot \log_e 2$

(D) $8 \cdot \log_e 2$

Answer: (A) $2 \cdot \log_e 2$ · Official APSCHE final key

Q527 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

If $x \neq \frac{-3}{\sqrt{2}}$, then $\int \frac{x^2}{2x^2+6\sqrt{2}x+9}dx =$

(A) $\frac{1}{2\sqrt{2}}\left[(\sqrt{2}x+3)-6\log|\sqrt{2}x+3|-\frac{9}{\sqrt{2}x+3}\right]+c$

(B) $\frac{1}{2\sqrt{2}}\left[\sqrt{2}x+3-6\log\left|(\sqrt{2}x+3)\right|+\frac{9}{\sqrt{2}x+3}\right]+c$

(C) $\sqrt{2}x+3-6\log(\sqrt{2}x+3)+c$

(D) $\log\left(2x^2+6\sqrt{2}x+9\right)+c$

Answer: (A) $\frac{1}{2\sqrt{2}}\left[(\sqrt{2}x+3)-6\log|\sqrt{2}x+3|-\frac{9}{\sqrt{2}x+3}\right]+c$ · Official APSCHE final key

Q528 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

$\int \frac{\sqrt{1-x^2}\,\mathrm{Sin}^{-1}x+x}{\sqrt{1-x^2}}dx =$

(A) $x\,\mathrm{Sin}^{-1}x+\sqrt{1-x^2}+c$

(B) $\mathrm{Sin}^{-1}x+\sqrt{1-x^2}+c$

(C) $x\,\mathrm{Sin}^{-1}x+c$

(D) $\frac{x\,\mathrm{Sin}^{-1}x}{\sqrt{1-x^2}}+c$

Answer: (C) $x\,\mathrm{Sin}^{-1}x+c$ · Official APSCHE final key

Q529 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

If $\int x^3e^{2x}dx=\frac{e^{2x}}{8}f(x)+c$ then the sum of all the complex roots of $f(x)=1$ is

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

(B) 3

(C) 1

(D) 2

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

Q530 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

$\int \sin^5 x\cdot\cos^5 x\,dx =$

EdLoop EAPCET

(A) $\frac{\cos^6 x}{60}\left(6\sin^4 x + 3\sin^2 x + 1\right) + c$

(B) $-\frac{\sin^6 x}{60}\left(6\cos^4 x + 3\cos^2 x + 1\right) + c$

(C) $-\frac{\cos^6 x}{60}\left(6\sin^4 x + 3\sin^2 x + 1\right) + c$

(D) $\frac{\sin^6 x}{60}\left(6\cos^4 x + 3\cos^2 x + 1\right) + c$

Options (3) or (4) were accepted. More than one answer was accepted. · Official APSCHE final key

Q531 TS EAMCET 2018 · 7 May · Shift 1 MCQ

If $\int \text{Sin}^{-1}\left(\sqrt{\frac{x}{a+x}}\right)dx = A(x) + \text{constant}$, then $A(x) =$

(A) $a\tan^{-1}\sqrt{\frac{x}{a}} + ax$

(B) $\frac{1}{\sqrt{a+x}}\tan^{-1}\sqrt{\frac{x}{a}} - \sqrt{ax}$

(C) $(a+x)\tan^{-1}\sqrt{x} + a\sqrt{x}$

(D) $(a+x)\tan^{-1}\sqrt{\frac{x}{a}} - \sqrt{ax}$

Answer: (D) $(a+x)\tan^{-1}\sqrt{\frac{x}{a}} - \sqrt{ax}$ · The council's preliminary key

Q532 TS EAMCET 2018 · 7 May · Shift 1 MCQ

$$\int \frac{\cos 2x \cdot \sin 4x}{\cos^4 x\left(1+\cos^2 2x\right)}dx =$$

(A) $\log\left[\frac{1+\cos^2 2x}{1+\cos 2x}\right] - \tan^2 x + c$

(B) $\log\left(\frac{1+\cos^2 2x}{1+\cos 2x}\right) + \tan^2 x + c$

(C) $\log\left(\frac{1+\cos 2x}{1+\cos^2 2x}\right) + \sec^2 x + c$

(D) $\log\left(\frac{(1+\cos 2x)^2}{1+\cos^2 2x}\right) + \sec^2 x + c$

Answer: (D) $\log\left(\frac{(1+\cos 2x)^2}{1+\cos^2 2x}\right) + \sec^2 x + c$ · The council's preliminary key

Q533 TS EAMCET 2018 · 7 May · Shift 1 MCQ

$$\int (\log x)^3 x^4 dx =$$

EdLoop EAPCET

(A) $\frac{x^5}{625}\left[125p^3-75p^2+30p-6\right]+c$ (where $p=\log x$)

(B) $\frac{x^5}{625}\left[125p^3-25p^2+30p-5\right]+c$ (where $p=\log x$)

(C) $\frac{x^5}{625}\left[125p^3-60p^2-25p+5\right]+c$ (where $p=\log x$)

(D) $\frac{x^5}{125}\left[625p^3-75p^2+30p+6\right]+c$ (where $p=\log x$)

Answer: (A) $\frac{x^5}{625}\left[125p^3-75p^2+30p-6\right]+c$ (where $p=\log x$) · The council's preliminary key

Q534 TS EAMCET 2018 · 7 May · Shift 1 MCQ

If $\int\frac{\sqrt{x}}{\sqrt{x}-\sqrt[3]{x}}dx=x+Ex^{5/6}+Dx^{2/3}+Cx^{1/2}+Bx^{1/3}+Ax^{1/6}+\log\left(\sqrt[6]{x}-1\right)^6+K$, then $A+B+C+D+E=$

(A) $\frac{137}{10}$

(B) $\frac{129}{10}$

(C) $\frac{119}{10}$

(D) $\frac{117}{10}$

Answer: (A) $\frac{137}{10}$ · The council's preliminary key

Q535 TS EAMCET 2018 · 5 May · Shift 1 MCQ

$\int\left(\sqrt{\tan x}+\sqrt{\cot x}\right)dx=$

(A) $\sqrt{2}\,\mathrm{Sin}^{-1}(\sin x+\cos x)+c$

(B) $\sqrt{2}\,\mathrm{Cos}^{-1}(\sin x+\cos x)+c$

(C) $\sqrt{2}\,\mathrm{Cos}^{-1}(\sin x-\cos x)+c$

(D) $\sqrt{2}\,\mathrm{Sin}^{-1}(\sin x-\cos x)+c$

Answer: (D) $\sqrt{2}\,\mathrm{Sin}^{-1}(\sin x-\cos x)+c$ · The council's preliminary key

Q536 TS EAMCET 2018 · 5 May · Shift 1 MCQ

$\int\frac{dx}{(2ax+x^2)^{3/2}}=$

(A) $\frac{-1}{a^2}\frac{(x+a)}{\sqrt{2ax+x^2}}+c$

(B) $\frac{-(x+a)}{\sqrt{2ax+x^2}}+c$

(C) $\frac{1}{2a^2}\frac{(x+a)}{\sqrt{2ax+x^2}}+c$

(D) $\frac{-1}{a}\frac{(x+a)}{\sqrt{2ax+x^2}}+c$

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

Q537 TS EAMCET 2018 · 5 May · Shift 1 MCQ

If $\int \frac{2\,dx}{\sqrt{\cot^2 x - \tan^2 x}} = -\sqrt{f(x)} + c$, then $f(x) =$

(A) $\cot x$

(B) $\sin 2x$

(C) $\cos 2x$

(D) $\tan x$

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

Q538 TS EAMCET 2018 · 5 May · Shift 1 MCQ

$\int \frac{3^x}{\sqrt{9^x - 1}} dx =$

(A) $\frac{1}{\log 3} \log \left|3^x + \sqrt{9^x - 1}\right| + c$

(B) $\frac{1}{\log 3} \log \left|3^x - \sqrt{9^x - 1}\right| + c$

(C) $\frac{1}{\log 9} \log \left|3^x - \sqrt{9^x - 1}\right| + c$

(D) $\frac{1}{\log 9} \log \left|9^x - \sqrt{9^x - 1}\right| + c$

Answer: (A) $\frac{1}{\log 3} \log \left|3^x + \sqrt{9^x - 1}\right| + c$ · The council's preliminary key

Q539 TS EAMCET 2018 · 5 May · Shift 2 MCQ

On $I \subset R - \{-1, 1\}$, $\int \mathrm{Tan}^{-1}\left(\frac{2x}{1-x^2}\right) dx =$

(A) $2x\,\mathrm{Tan}^{-1}\left(\frac{2x}{1-x^2}\right) + \log\left(1+x^2\right) + c$

(B) $x\,\mathrm{Tan}^{-1}\left(\frac{2x}{1-x^2}\right) - \log\left(1-x^2\right) + c$

(C) $x\,\mathrm{Tan}^{-1}\left(\frac{2x}{1-x^2}\right) - \log\left(1+x^2\right) + c$

(D) $x^2\,\mathrm{Tan}^{-1}\left(\frac{x}{1-x^2}\right) + \log\left(1-x^2\right) + c$

Answer: (C) $x\,\mathrm{Tan}^{-1}\left(\frac{2x}{1-x^2}\right) - \log\left(1+x^2\right) + c$ · The council's preliminary key

Q540 TS EAMCET 2018 · 5 May · Shift 2 MCQ

$\int \frac{dx}{\sqrt{(x-1)(x-2)}} =$

(A) $\text{Sin}^{-1}(2x+5)+c$
(B) $\sinh^{-1}(2x-5)+c$
(C) $\cosh^{-1}(2x-3)+c$
(D) $\text{Sin}^{-1}(3-2x)+c$

Answer: (C) $\cosh^{-1}(2x-3)+c$ · The council's preliminary key

Q541 TS EAMCET 2018 · 5 May · Shift 2 MCQ

If $\int \frac{x^4+1}{x^6+1}dx = A\,\text{Tan}^{-1}x + B\,\text{Tan}^{-1}x^3 + c$, then $(A,B) =$

(A) $\left(1,\frac{1}{3}\right)$
(B) $\left(1,\frac{1}{4}\right)$
(C) $\left(1,\frac{1}{6}\right)$
(D) $\left(1,\frac{4}{3}\right)$

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

Q542 TS EAMCET 2018 · 5 May · Shift 2 MCQ

If $\int x(1+x)\log\left(1+x^2\right)dx = F(x)\log\left(1+x^2\right) - \frac{2}{3}\text{Tan}^{-1}x - \frac{2x^3}{9} - \frac{x^2}{2} + \frac{2x}{3} + c$, then $F(x) =$

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

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

Q543 TS EAMCET 2018 · 5 May · Shift 2 MCQ

If $I_n = \int \cos^n x\,dx$, then $6I_6 - 5I_4 =$

(A) $-\cos^5 x \sin^2 x$
(B) $\cos^6 x \sin^2 x$
(C) $\cos^3 x \sin^2 x$
(D) $\cos^5 x \sin x$

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

EdLoop EAPCET

Q544 TS EAMCET 2018 · 4 May · Shift 1 MCQ

$\int \frac{dx}{(e^x + e^{-x})^2} =$

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

(B) $-\frac{1}{2(e^{2x}+1)} + c$

(C) $\frac{1}{3(e^{2x}+1)} + c$

(D) $-\frac{1}{(e^{2x}+1)} + c$

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

Q545 TS EAMCET 2018 · 4 May · Shift 1 MCQ

If $\int \frac{x}{(x^2+1)(x-1)}dx = A\log|x^2+1| + B\,\mathrm{Tan}^{-1}x + C\log|x-1| + d$, then $A+B+C =$

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

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

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

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

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

Q546 TS EAMCET 2018 · 4 May · Shift 2 MCQ

If $\int \phi(x)dx = \psi(x)$ then $\int (\phi oh)(x)\,h(x)\,h'(x)\,dx =$

(A) $(\phi oh)(x)\phi'(x) - \int (\phi oh)(x)h'(x)dx + c$

(B) $(\psi oh)(x)h(x) - \int (\psi oh)(x)h'(x)dx + c$

(C) $(\psi oh)(x)\phi(x) - \int (\psi oh)(x)\phi'(x)dx + c$

(D) $(\psi o\phi)(x)h(x) - \int (\psi o\phi)(x)h'(x)dx + c$

Answer: (B) $(\psi oh)(x)h(x) - \int (\psi oh)(x)h'(x)dx + c$ · The council's preliminary key

Q547 TS EAMCET 2018 · 4 May · Shift 2 MCQ

If $f\left(\frac{t+1}{2t+1}\right) = t+1$, then $\int f(x)dx =$

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

(B) $\log(2x-1)+\frac{1}{2}\log(x+1)+c$

(C) $\frac{1}{2}\log(2x-1)+c$

(D) $\frac{x}{2}+\frac{1}{4}\log(2x-1)+c$

Answer: (D) $\frac{x}{2}+\frac{1}{4}\log(2x-1)+c$ · The council's preliminary key

Q548 TS EAMCET 2018 · 4 May · Shift 2 MCQ

$$\int \frac{x^8-9x^2+18}{x^4-3x^2+3}\,dx =$$

(A) $\frac{x^4}{4}+x^3+6x^2+c$

(B) $\frac{x^5}{5}+\frac{x^4}{4}+6x+c$

(C) $\frac{x^5}{5}+x^3+6x+c$

(D) $\frac{x^5}{5}-\frac{x^3}{2}+6x^2+c$

Answer: (C) $\frac{x^5}{5}+x^3+6x+c$ · The council's preliminary key

Q549 TS EAMCET 2018 · 4 May · Shift 2 MCQ

$$\int(\cot x\cot(x+\alpha)+1)dx =$$

(A) $\cot\alpha\log\left|\frac{\sin x}{\sin(x+\alpha)}\right|+c$

(B) $\log|\sin x\sin(x+\alpha)|+x+c$

(C) $\log|\sin x\cos(x+\alpha)|+x+c$

(D) $\tan\alpha\log\left|\frac{\cos x}{\sin(x+\alpha)}\right|+c$

Answer: (A) $\cot\alpha\log\left|\frac{\sin x}{\sin(x+\alpha)}\right|+c$ · The council's preliminary key

Q550 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

If $g\left(\frac{t+1}{2t+1}\right)=t+1$, then $\int g(x)\,dx =$

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

(B) $\log_e(2x-1)+\frac{1}{2}\log_e|(x+1)|+c$

(C) $\frac{1}{2}\log_e\left|\left(\frac{x+1}{2x+1}\right)\right|+c$

(D) $\frac{x}{2}+\frac{1}{4}\log_e|2x-1|+c$

Answer: (D) $\frac{x}{2}+\frac{1}{4}\log_e|2x-1|+c$ · The council's preliminary key

Q551 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

$$\int \frac{x^8-9x^2+18}{x^4-3x^2+3}\,dx =$$

EdLoop EAPCET

(A) $\frac{x^5}{4}+x^3+6x^2+c$
(B) $\frac{x^5}{5}+\frac{x^4}{4}+6x+c$
(C) $\frac{x^5}{5}+x^3+6x+c$
(D) $\frac{x^5}{5}-\frac{x^3}{2}+6x^2+c$

Answer: (C) $\frac{x^5}{5}+x^3+6x+c$ · The council's preliminary key

Q552 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

$\int \frac{x^4+1}{1+x^6}\,dx =$

(A) $\mathrm{Tan}^{-1}(x^3)+\mathrm{Tan}^{-1}x+c$
(B) $\frac{1}{3}\mathrm{Tan}^{-1}x+\mathrm{Tan}^{-1}x^3+c$
(C) $3\mathrm{Tan}^{-1}x^3+\mathrm{Tan}^{-1}x+c$
(D) $\mathrm{Tan}^{-1}x+\frac{1}{3}\mathrm{Tan}^{-1}x^3+c$

Answer: (D) $\mathrm{Tan}^{-1}x+\frac{1}{3}\mathrm{Tan}^{-1}x^3+c$ · The council's preliminary key

Q553 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

$\int(\log x)^3x^5\,dx =$

(A) $x^6\left[\frac{(\log x)^3}{12}-\frac{1}{6}(\log x)^2+\frac{1}{6}\log x-\frac{1}{36}\right]+c$
(B) $x^6\left[\frac{(\log x)^3}{6}-\frac{1}{18}(\log x)^2+\frac{\log x}{12}-\frac{1}{36}\right]+c$
(C) $x^6\left[\frac{(\log x)^3}{6}+\frac{1}{12}(\log x)^2-\frac{\log x}{12}+\frac{1}{36}\right]+c$
(D) $x^6\left[\frac{(\log x)^3}{6}-\frac{(\log x)^2}{12}+\frac{\log x}{36}-\frac{1}{216}\right]+c$

Answer: (D) $x^6\left[\frac{(\log x)^3}{6}-\frac{(\log x)^2}{12}+\frac{\log x}{36}-\frac{1}{216}\right]+c$ · The council's preliminary key

Q554 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

If $\int \frac{x^{\frac{1}{2}}}{\sqrt{a^3-x^3}}dx=P(x)+c$, then $P(x)=$

(A) $\frac{1}{3}\mathrm{Sin}^{-1}\left(\frac{x^3}{a^3}\right)$
(B) $\frac{2}{3}\mathrm{Cos}^{-1}\left(\frac{x}{a}\right)$
(C) $\frac{2}{3}\mathrm{Sin}^{-1}\left(\frac{x}{a}\right)^{\frac{3}{2}}$
(D) $\frac{1}{3}\mathrm{Sin}^{-1}\left(\frac{x}{a}\right)^{\frac{1}{2}}$

Answer: (C) $\frac{2}{3}\mathrm{Sin}^{-1}\left(\frac{x}{a}\right)^{\frac{3}{2}}$ · The council's preliminary key

Q555 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

$\int \mathrm{Tan}^{-1}\left(x^{\frac{1}{3}}\right)dx =$

EdLoop EAPCET

(A) $\frac{1}{2}\log\left(1+x^{\frac{2}{3}}\right)-\frac{1}{2}x^{\frac{2}{3}}+c$

(B) $x\mathrm{Tan}^{-1}\left(x^{\frac{1}{3}}\right)-\frac{1}{2}x^{\frac{2}{3}}+c$

(C) $\frac{1}{2}\log\left(1+x^{\frac{1}{3}}\right)-\frac{1}{2}x^{\frac{2}{3}}+c$

(D) $x\mathrm{Tan}^{-1}\left(x^{\frac{1}{3}}\right)+\frac{1}{2}\log\left(1+x^{\frac{2}{3}}\right)-\frac{1}{2}x^{\frac{2}{3}}+c$

Answer: (D) $x\mathrm{Tan}^{-1}\left(x^{\frac{1}{3}}\right)+\frac{1}{2}\log\left(1+x^{\frac{2}{3}}\right)-\frac{1}{2}x^{\frac{2}{3}}+c$ · The council's preliminary key

Q556 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

If $\int\frac{3x+1}{(x-1)^3(x+1)}dx=A\cdot\log\left|\frac{x+1}{x-1}\right|+\frac{B}{x-1}+\frac{C}{(x-1)^2}+D$ then $A+B+C=$

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

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

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

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

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

Q557 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

For any integer $n\geq 2$, if $I_n=\int\cot^n x\,dx$ then $I_5=$

(A) $\frac{-\cot^4 x}{4}+\frac{\cot^2 x}{2}+\log|\sin x|+c$

(B) $\frac{-\cot^4 x}{4}+\frac{\cot^2 x}{2}-\log|\sin x|+c$

(C) $\frac{\cot^4 x}{4}+\frac{\cot^2 x}{2}+\log|\cos x|+c$

(D) $\frac{\cot^4 x}{4}-\frac{\cot^2 x}{2}-\cot x+c$

Answer: (A) $\frac{-\cot^4 x}{4}+\frac{\cot^2 x}{2}+\log|\sin x|+c$ · The council's preliminary key

Q558 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

$\int\frac{x-1}{(x+1)\sqrt{x(x^2+x+1)}}dx=$

(A) $\mathrm{Tan}^{-1}\left(\frac{\sqrt{x^2+x+1}}{x}\right)+c$

(B) $2\cdot\mathrm{Tan}^{-1}\left(\frac{x^2+x+1}{x}\right)+c$

(C) $\mathrm{Tan}^{-1}\left(\frac{x^2+x+1}{x}\right)+c$

(D) $2\cdot\mathrm{Tan}^{-1}\left(\sqrt{x+\frac{1}{x}+1}\right)+c$

Answer: (D) $2\cdot\mathrm{Tan}^{-1}\left(\sqrt{x+\frac{1}{x}+1}\right)+c$ · The council's preliminary key

Q559 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

$\int\frac{\cos^3 x+\cos^5 x}{\sin^2 x+\sin^4 x}dx=$

(A) $\sin x - 6\,\mathrm{Tan}^{-1}(\sin x) + c$

(B) $\sin x - 2(\sin x)^{-1} + c$

(C) $\sin x - 2(\sin x)^{-1} - 6\,\mathrm{Tan}^{-1}(\sin x) + c$

(D) $\sin x - 2(\sin x)^{-1} + 5\,\mathrm{Tan}^{-1}(\sin x) + c$

Answer: (C) $\sin x - 2(\sin x)^{-1} - 6\,\mathrm{Tan}^{-1}(\sin x) + c$ · The council's preliminary key

Q560 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

$\int \frac{dx}{\tan x + \cot x + \sec x + \mathrm{cosec}\, x} =$

(A) $\frac{1}{2}(\sin x - \cos x + x) + c$

(B) $\frac{1}{2}(\sin x - \cos x - \tan x + \cot x) + c$

(C) $\frac{1}{2}(\sin x - \cos x - x) + c$

(D) $\frac{1}{2}(\sin x + \cos x - \tan x - \cot x) + c$

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

Q561 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

If $f(x) = \int \mathrm{cosec}^5 x\, dx$, then $f\left(\frac{\pi}{4}\right) =$

(A) $-\frac{1}{4}\left[3\sqrt{2} - 5\log\left(\sqrt{2}+1\right)\right] + c$

(B) $-\frac{1}{8}\left[5\sqrt{2} - 3\log\left(\sqrt{2}+1\right)\right] + c$

(C) $-\frac{1}{8}\left[7\sqrt{2} + 3\log\left(\sqrt{2}+1\right)\right] + c$

(D) $\frac{1}{8}\left[5\sqrt{2} + \log\left(\sqrt{2}+1\right)\right] + c$

Answer: (C) $-\frac{1}{8}\left[7\sqrt{2} + 3\log\left(\sqrt{2}+1\right)\right] + c$ · The council's preliminary key

Q562 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

$\int \frac{x}{x^3 - 3x + 2} dx =$

(A) $\frac{2}{9}\log\left|\frac{x-1}{x+2}\right| + c$

(B) $\frac{2}{9}\log\left|\frac{x+2}{x-1}\right| + c$

(C) $\frac{1}{3}\frac{1}{x-1} + \frac{2}{9}\log\left|\frac{x-1}{x+2}\right| + c$

(D) $-\frac{1}{3}\frac{1}{(x-1)} + \frac{2}{9}\log\left|\frac{x-1}{x+2}\right| + c$

Answer: (D) $-\frac{1}{3}\frac{1}{(x-1)} + \frac{2}{9}\log\left|\frac{x-1}{x+2}\right| + c$ · The council's preliminary key

Q563 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

$\int \frac{\sqrt{x^2+1}\left[\log(x^2+1) - 2\log x\right]}{x^4} dx =$

(A) $\frac{1}{9}\left(1+\frac{1}{x^2}\right)^{\frac{3}{2}}\left[2-3\log\left(1+\frac{1}{x^2}\right)\right]+c$

(B) $\frac{1}{3}\left(1+\frac{1}{x^2}\right)^{\frac{1}{2}}\left[6-\log\left(1+\frac{1}{x^2}\right)^2\right]+c$

(C) $\frac{1}{9}\left(1+\frac{1}{x^2}\right)\left[3-2\log\left(1+\frac{1}{x^2}\right)^{\frac{1}{2}}\right]+c$

(D) $\frac{1}{3}\left(1+\frac{1}{x^2}\right)^{\frac{3}{2}}\left[3+\log\left(1+\frac{1}{x^2}\right)\right]+c$

Answer: (A) $\frac{1}{9}\left(1+\frac{1}{x^2}\right)^{\frac{3}{2}}\left[2-3\log\left(1+\frac{1}{x^2}\right)\right]+c$ · The council's preliminary key

Q564 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

$\int \frac{dx}{\sin x+\sin 2x} =$

(A) $\frac{1}{6}\log(1-\cos x)+\frac{1}{2}\log(1+\cos x)+\frac{2}{3}\log|1+2\cos x|+c$

(B) $\frac{1}{6}\log(1-\cos x)-\frac{1}{2}\log(1+\cos x)-\frac{2}{3}\log|1+2\cos x|+c$

(C) $\frac{1}{6}\log(1-\cos x)+\frac{1}{2}\log(1+\cos x)-\frac{2}{3}\log|1+2\cos x|+c$

(D) $\frac{1}{6}\log\left[(1-\cos x)(1+\cos x)|1+2\cos x|\right]+c$

Answer: (C) $\frac{1}{6}\log(1-\cos x)+\frac{1}{2}\log(1+\cos x)-\frac{2}{3}\log|1+2\cos x|+c$ · The council's preliminary key

Q565 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

$\int\left(\sec^4 x+\tan^4 x\right)dx =$

(A) $\frac{2}{3}\tan^3 x-\frac{2}{3}\tan x+x+c$

(B) $\frac{1}{3}\sec^2 x\tan x+\frac{5}{3}\tan x+\frac{\tan^3 x}{3}+x+c$

(C) $\frac{2}{3}\tan^3 x+x+c$

(D) $\frac{1}{3}\sec^2 x\tan x-\frac{5}{3}\tan x+\frac{\tan^3 x}{3}+x+c$

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

Q566 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

$\int\frac{\sin 2x\,dx}{\sin^4 x+\cos^4 x}=\mathrm{Tan}^{-1}(f(x))+c$, then $f\left(\frac{\pi}{3}\right)=$

(A) 1

(B) 2

(C) 3

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

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

Q567 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

$\int\left(\frac{\log x-1}{1+(\log x)^2}\right)^2 dx =$

EdLoop EAPCET

(A) $\frac{\log x}{1+(\log x)^2}+c$

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

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

(D) $\frac{-x}{1+(\log x)^2}+c$

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

Q568 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

$\int \frac{dx}{x^3+3x^2+2x} =$

(A) $\log|x|+\log\left|\frac{x+2}{x+1}\right|+c$

(B) $\log|x|-\log|x+1|+\log|x+2|+c$

(C) $\frac{1}{2}[\log|x|+\log|x+1|+\log|x+2|]+c$

(D) $\frac{1}{2}\log\left(\frac{|x^2+2x|}{(x+1)^2}\right)+c$

Answer: (D) $\frac{1}{2}\log\left(\frac{|x^2+2x|}{(x+1)^2}\right)+c$ · The council's preliminary key

Q569 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

For $n \geq 2$, If $I_n = \int \sec^n x\,dx$, then $I_4 - \frac{2}{3}I_2 =$

(A) $\sec^2 x \tan x + c$

(B) $\frac{1}{3}\sec^2 x \tan x + c$

(C) $\frac{2}{3}\sec^2 x \tan x + c$

(D) $\frac{1}{3}\log|\sec x + \tan x| + c$

Answer: (B) $\frac{1}{3}\sec^2 x \tan x + c$ · The council's preliminary key

Q570 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

For $x < 1$, $\int \frac{x-x^2}{\sqrt{1-x}}dx =$

(A) $\frac{4}{3}(1-x)^{\frac{3}{2}}-\frac{2}{5}(1-x)^{\frac{5}{2}}-2\sqrt{1-x}+c$

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

(C) $\frac{2}{3}(1-x)^{\frac{3}{2}}-2\sqrt{1-x}+c$

(D) $-\frac{2}{15}(1-x)^{\frac{3}{2}}(2+3x)+c$

Answer: (D) $-\frac{2}{15}(1-x)^{\frac{3}{2}}(2+3x)+c$ · The council's preliminary key

Q571 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

$\int \frac{dx}{(2\sin x+\sec x)^4} = A(1+\tan x)^{-5}+B(1+\tan x)^{-6}+C(1+\tan x)^{-7}+k$, then $A+B+C =$

(A) $\frac{-86}{105}$
(B) $\frac{-1}{105}$
(C) $\frac{-26}{105}$
(D) $\frac{-16}{105}$

Answer: (D) $\frac{-16}{105}$ · The council's preliminary key

Q572 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

$$\int \frac{2x^2 - 1 + x^2\sqrt{x^2+4}}{x^2(x^2+4)}dx =$$

(A) $\frac{9}{8}\text{Tan}^{-1}\frac{x}{2} + \frac{1}{4x} + \cosh^{-1}\frac{x}{2} + c$
(B) $\frac{9}{8}\text{Tan}^{-1}\frac{x}{2} + \frac{1}{4x} + \sinh^{-1}\frac{x}{2} + c$
(C) $\frac{9}{16}\log\left|\frac{x+2}{x-2}\right| + \frac{1}{4x} + \log\left|\frac{x+\sqrt{x^2+4}}{2}\right| + c$
(D) $\frac{9}{16}\log\left|\frac{2-x}{2+x}\right| + \frac{1}{4x} + \cosh^{-1}\frac{x}{2} + c$

Answer: (B) $\frac{9}{8}\text{Tan}^{-1}\frac{x}{2} + \frac{1}{4x} + \sinh^{-1}\frac{x}{2} + c$ · The council's preliminary key

Q573 TS EAMCET 2017 · 12 May · Offline MCQ

If $\int e^{2x}f'(x)\,dx = g(x)$, then $\int \left(e^{2x}f(x) + e^{2x}f'(x)\right)dx =$

(A) $\frac{1}{2}[e^{2x}f(x) - g(x)] + C$
(B) $\frac{1}{2}[e^{2x}f(x) + g(x)] + C$
(C) $\frac{1}{2}[e^{2x}f(2x) + g(x)] + C$
(D) $\frac{1}{2}[e^{2x}f'(x) + g(x)] + C$

Answer: (B) $\frac{1}{2}[e^{2x}f(x) + g(x)] + C$ · The council's preliminary key

Q574 TS EAMCET 2017 · 12 May · Offline MCQ

$$\int x^4 e^{2x}\,dx =$$

(A) $\frac{e^{2x}}{4}(2x^4-4x^3+6x^2-6x+3)+C$

(B) $\frac{e^{2x}}{2}(2x^4-4x^3+6x^2-6x+3)+C$

(C) $\frac{e^{2x}}{8}(2x^4+4x^3+6x^2+6x+3)+C$

(D) $-\frac{e^{2x}}{4}(2x^4+4x^3+6x^2+6x+3)+C$

Answer: (A) $\frac{e^{2x}}{4}(2x^4-4x^3+6x^2-6x+3)+C$ · The council's preliminary key

Q575 TS EAMCET 2017 · 12 May · Offline MCQ

$$\int \frac{dx}{x(x^4+1)} =$$

(A) $\frac{1}{4}\log\left(\frac{x^4+1}{x^4}\right)+C$

(B) $\frac{1}{4}\log\left(\frac{x^4}{x^4+1}\right)+C$

(C) $\frac{1}{4}\log(x^4+1)+C$

(D) $\frac{1}{4}\log\left(\frac{x^4}{x^4+2}\right)+C$

Answer: (B) $\frac{1}{4}\log\left(\frac{x^4}{x^4+1}\right)+C$ · The council's preliminary key

Q576 TS EAMCET 2017 · 12 May · Offline MCQ

If $\int f(x)\cos x\,dx=\frac{1}{2}(f(x))^2+C$ and $f(0)=0$, then $f'(0)=$

(A) 1

(B) -1

(C) 0

(D) 2

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

Q577 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

$$\int \frac{x^{e-1}+e^{x-1}}{x^e+e^x}\,dx =$$

(A) $\frac{1}{e}\log|x^e+e^x|+c$

(B) $e\log|x^e+e^x|+c$

(C) $\frac{-1}{e}\log|x^e+e^x|+c$

(D) $-e\log|x^e+e^x|+c$

Answer: (A) $\frac{1}{e}\log|x^e+e^x|+c$ · The council's preliminary key

Q578 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

$$\int\frac{x+\sin x}{1+\cos x}\,dx=$$

(A) $x\tan\frac{x}{2}+\sec\frac{x}{2}+c$

(B) $x\sec\frac{x}{2}+\tan\frac{x}{2}+c$

(C) $x\sin\frac{x}{2}+\cos\frac{x}{2}+c$

(D) $x\tan\frac{x}{2}+c$

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

Q579 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

$$\int\frac{5x^2+3}{x^2(x^2-2)}\,dx=$$

(A) $\frac{13}{4\sqrt{2}}\log\left|\frac{x+\sqrt{2}}{x-\sqrt{2}}\right|+\frac{3}{2x}+c$

(B) $\frac{13}{2\sqrt{2}}\log\left|\frac{\sqrt{2}-x}{\sqrt{2}+x}\right|+\frac{3}{2x}+c$

(C) $\frac{5}{3\sqrt{2}}\log\left|\frac{x+\sqrt{2}}{x-\sqrt{2}}\right|+\frac{3}{5}x+c$

(D) $\frac{13}{4\sqrt{2}}\log\left|\frac{x-\sqrt{2}}{x+\sqrt{2}}\right|+\frac{3}{2x}+c$

Answer: (D) $\frac{13}{4\sqrt{2}}\log\left|\frac{x-\sqrt{2}}{x+\sqrt{2}}\right|+\frac{3}{2x}+c$ · The council's preliminary key

Q580 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

If $I_n=\int\frac{\sin nx}{\cos x}\,dx$, then $I_n=$

EdLoop EAPCET

(A) $\frac{-2}{n-1}\cos(n-1)x - I_{n-2}$

(B) $\frac{-2}{n+1}\sin(n+1)x - I_{n-2}$

(C) $\frac{-2}{n+1}\cos(n-1)x - I_{n-2}$

(D) $\frac{2}{n-1}\cos(n-1)x + I_{n-2}$

Answer: (A) $\frac{-2}{n-1}\cos(n-1)x - I_{n-2}$ · The council's preliminary key

Q581 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

$\int \frac{\sin(x-a)}{\sin(x-b)}dx = Ax + B\log|\sin(x-b)| + C \Rightarrow (A,B) =$

(A) $(\cos(b-a), \sin(b-a))$

(B) $(\cos(b-a), \sin(a-b))$

(C) $(-\cos(b-a), \sin(b-a))$

(D) $(-\cos(b-a), \sin(a-b))$

Answer: (A) $(\cos(b-a), \sin(b-a))$ · The council's preliminary key

Q582 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

$\int \frac{\log_e x}{(1+\log_e x)^2}dx =$

(A) $-\frac{x}{1+\log_e x} + C$

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

(C) $\frac{x}{(1+\log_e x)} + C$

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

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

Q583 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

If $\int \frac{x^2}{(x-1)(x-2)(x-3)}dx = \log_e f(x)$ then $f(x) =$

EdLoop EAPCET

(A) $C\frac{(x-1)(x-3)^9}{(x-2)^4}$

(B) $C\cdot\frac{\sqrt{|x-1|}\sqrt{|x-3|^9}}{(x-2)^4}$

(C) $C\frac{(x-1)^2\cdot(x-2)^4}{(x-3)^9}$

(D) $C\frac{(x-1)^3(x-2)^5}{(x-3)^4}$

Answer: (B) $C\cdot\frac{\sqrt{|x-1|}\sqrt{|x-3|^9}}{(x-2)^4}$ · The council's preliminary key

Q584 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

If $I_n=\int\frac{t^{2n}}{1+t^2}dt$, then $I_{n+1}=$

(A) $\frac{t^{2n+1}}{2n+1}+I_{2n}$

(B) $\frac{t^{2n+1}}{2n+1}+I_n$

(C) $\frac{t^{2n+1}}{2n+1}-I_{2n}$

(D) $\frac{t^{2n+1}}{2n+1}-I_n$

Answer: (D) $\frac{t^{2n+1}}{2n+1}-I_n$ · The council's preliminary key

Q585 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

$\int\frac{1}{x\sqrt{x^6+1}}dx=$

(A) $\frac{1}{3}\text{Sinh}^{-1}\left(\frac{1}{x^3}\right)+C$

(B) $-\frac{1}{3}\text{Sinh}^{-1}(x^3)+C$

(C) $\frac{-1}{3}\text{Sinh}^{-1}\left(\frac{1}{x^3}\right)+C$

(D) $3\text{Sinh}^{-1}\left(\frac{1}{x^3}\right)+C$

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

Q586 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

$\int x^2\sin x\cos x\,dx=$

(A) $-\frac{x^2\cos 2x}{2}+\frac{x\sin 2x}{4}+\frac{\cos 2x}{8}+c$

(B) $\frac{(1-2x)^2}{2}\cos 2x+x\sin 2x+c$

(C) $\frac{(1-2x^2)}{8}\cos 2x+\frac{x}{4}\sin 2x+c$

(D) $\frac{(1-2x^2)^2}{4}\cos 2x+\frac{x}{2}\sin 2x+c$

Answer: (C) $\frac{(1-2x^2)}{8}\cos 2x+\frac{x}{4}\sin 2x+c$ · The council's preliminary key

EdLoop EAPCET

Q587 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

$\int \frac{dx}{x^{2/3}\left(1+x^{2/3}\right)} =$

(A) $3\mathrm{Sin}^{-1}\left(x^{1/3}\right)+c$

(B) $3\mathrm{Cos}^{-1}\left(x^{1/3}\right)+c$

(C) $3\mathrm{Tan}^{-1}\left(x^{1/3}\right)+c$

(D) $3\mathrm{Sec}^{-1}\left(x^{1/3}\right)+c$

Answer: (C) $3\mathrm{Tan}^{-1}\left(x^{1/3}\right)+c$ · The council's preliminary key

Q588 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

$I_n=\int \frac{t^n}{1+t^2}dt,\ (n=1,2,3\ldots) \Rightarrow I_6+I_4=$

(A) $\frac{1}{5}t^5+c$

(B) $\frac{1}{7}t^7+c$

(C) $\frac{1}{4}t^4+c$

(D) $\frac{1}{3}t^3+c$

Answer: (A) $\frac{1}{5}t^5+c$ · The council's preliminary key

Q589 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

If $0<a<1$, then $\int \frac{dx}{1-2a\cos x+a^2} =$

(A) $\frac{1}{1-a^2}\mathrm{Tan}^{-1}\left[\frac{1+a}{1-a}\tan\frac{x}{2}\right]+c$

(B) $\frac{2}{1+a^2}\mathrm{Tan}^{-1}\left[\frac{1-a}{1+a}\tan\frac{x}{2}\right]+c$

(C) $\frac{2}{1-a^2}\mathrm{Tan}^{-1}\left[\frac{1+a}{1-a}\tan\frac{x}{2}\right]+c$

(D) $\frac{2}{1+a}\mathrm{Tan}^{-1}\left[\frac{1-a^2}{1+a^2}\tan\frac{x}{2}\right]+c$

Answer: (C) $\frac{2}{1-a^2}\mathrm{Tan}^{-1}\left[\frac{1+a}{1-a}\tan\frac{x}{2}\right]+c$ · The council's preliminary key

Q590 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

If $\int \sin^5 x\,dx=\frac{-\cos^5 x}{5}+a\cos^3 x+b\cos x+c$, then $a+b=$

EdLoop EAPCET

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

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

Q591 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

$$\int \frac{6x+5}{\sqrt{6+x-2x^2}}\,dx =$$

(A) $-3\sqrt{6+x-2x^2}+\frac{13}{2\sqrt{2}}\,\mathrm{Sin}^{-1}\left(\frac{4x-1}{7}\right)+c$
(B) $-3\sqrt{6+x-2x^2}+\frac{13}{\sqrt{2}}\,\mathrm{Sinh}^{-1}\left(\frac{4x-1}{7}\right)+c$
(C) $-3\sqrt{6+x-2x^2}+\frac{13}{2\sqrt{3}}\,\mathrm{Sinh}^{-1}\left(\frac{4x+1}{7}\right)+c$
(D) $3\sqrt{6+x-2x^2}-\frac{13}{2\sqrt{2}}\,\mathrm{Cos}^{-1}\left(\frac{4x-1}{7}\right)+c$

Answer: (A) $-3\sqrt{6+x-2x^2}+\frac{13}{2\sqrt{2}}\,\mathrm{Sin}^{-1}\left(\frac{4x-1}{7}\right)+c$ · The council's preliminary key

---

Q592 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

$$\int \left(\sqrt{\tan x}+\sqrt{\cot x}\right)dx =$$

(A) $\sqrt{2}\,\mathrm{Tan}^{-1}\left(\frac{\tan x+1}{\sqrt{\tan x}}\right)+c$
(B) $\sqrt{2}\,\mathrm{Tan}^{-1}\left(\frac{\tan x-1}{\sqrt{2\tan x}}\right)+c$
(C) $\frac{1}{\sqrt{2}}\mathrm{Tan}^{-1}\left(\frac{\tan x+1}{\sqrt{2\tan x}}\right)+c$
(D) $\frac{1}{\sqrt{2}}\mathrm{Tan}^{-1}\left(\frac{\sqrt{\tan x}-1}{\sqrt{2\tan x}}\right)+c$

Answer: (B) $\sqrt{2}\,\mathrm{Tan}^{-1}\left(\frac{\tan x-1}{\sqrt{2\tan x}}\right)+c$ · The council's preliminary key

---

Q593 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

$$\int \frac{3\sin x-5\cos x}{7\cos x+2\sin x}dx =$$

(A) $-\frac{29}{53}x-\frac{31}{53}\log|7\cos x+2\sin x|+c$
(B) $\frac{11}{51}x+\frac{41}{51}\log|7\cos x+2\sin x|+c$
(C) $\frac{29}{53}x+\frac{31}{53}\log|3\sin x-5\cos x|+c$
(D) $\frac{29}{51}x-\frac{41}{51}\log|7\cos x+2\sin x|+c$

Answer: (A) $-\frac{29}{53}x-\frac{31}{53}\log|7\cos x+2\sin x|+c$ · The council's preliminary key

EdLoop EAPCET

Q594 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

$\int \frac{1-x^7}{x(1+x^7)}dx = a\ln|x| + b\ln|x^7+1| + c \Rightarrow (a,b) =$

(A) $\left(1, \frac{2}{7}\right)$
(B) $\left(1, \frac{-7}{2}\right)$
(C) $\left(1, \frac{-2}{7}\right)$
(D) $\left(2, \frac{-2}{7}\right)$

Answer: (C) $\left(1, \frac{-2}{7}\right)$ · The council's preliminary key

Q595 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

$\int \frac{6x^2-17x-5}{(x-3)(x-2)^2}dx =$

(A) $\log\frac{(x-2)^2}{(x-3)^4} + \frac{3}{x-2} + c$
(B) $\log\{(x-2)^4(x-3)^2\} + \frac{3}{x-2} + c$
(C) $\log\frac{(x-2)^8}{(x-3)^2} - \frac{15}{x-2} + c$
(D) $\log(x+3) - \frac{1}{x-2} + c$

Answer: (C) $\log\frac{(x-2)^8}{(x-3)^2} - \frac{15}{x-2} + c$ · The council's preliminary key

Q596 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

$\int \frac{e^x - 1}{e^x + 1}dx =$

(A) $2\log_e(1+e^x) + x + c$
(B) $2\log_e(1+e^x) - x + c$
(C) $\log_e(1+e^x) + x + c$
(D) $\log_e(1+e^x) - x + c$

Answer: (B) $2\log_e(1+e^x) - x + c$ · The council's preliminary key

Q597 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

$\int \mathrm{Cos}^{-1}(2x^2-1)\,dx =$

(A) $2\left(x\,\mathrm{Sin}^{-1}x + \sqrt{1-x^2}\right) + c$
(B) $2\left(x\,\mathrm{Cos}^{-1}x + \sqrt{1-x^2}\right) + c$
(C) $2\left(x\,\mathrm{Cos}^{-1}x - \sqrt{1-x^2}\right) + c$
(D) $2\left(x\,\mathrm{Sin}^{-1}x - \sqrt{1-x^2}\right) + c$

Answer: (C) $2\left(x\,\mathrm{Cos}^{-1}x - \sqrt{1-x^2}\right) + c$ · The council's preliminary key

EdLoop EAPCET

Q598 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

$$\int \frac{dx}{x(x^2+1)^3} =$$

(A) $\frac{1}{2(x^2+1)} + \frac{1}{4(x^2+1)^2} + \log\sqrt{\frac{x^2}{x^2+1}} + c$

(B) $\frac{1}{x^2+1} + \frac{1}{2(x^2+1)^2} + \log\sqrt{\frac{x}{x^2+1}} + c$

(C) $\frac{1}{2(x^2+1)} + \frac{1}{4(x^2+1)^3} + \log\sqrt{\frac{x}{x+1}} + c$

(D) $\frac{2}{x^2+1} - \frac{1}{4(x^2+1)^2} - \log\sqrt{\frac{x}{x+1}} + c$

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

Q599 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

$$\int x^5 e^{-2x}\,dx =$$

(A) $e^{-2x}\left[\frac{x^5}{2} - \frac{5x^4}{2^2} + \frac{20x^3}{2^3} - \frac{60x^2}{2^4} + \frac{120x}{2^5} - \frac{120}{2^6}\right] + c$

(B) $-e^{-2x}\left[\frac{x^5}{2} + \frac{5x^4}{4} + \frac{5x^3}{2} + \frac{15x^2}{4} + \frac{15x}{4} + \frac{15}{8}\right] + c$

(C) $-e^{-2x}\left[\frac{x^5}{2} - \frac{5x^4}{2^2} + \frac{20x^3}{2^3} - \frac{60x^2}{2^4} + \frac{120x}{2^5} - \frac{120}{2^6}\right] + c$

(D) $e^{-2x}\left[\frac{x^5}{2} + \frac{5x^4}{4} + \frac{5x^3}{2} + \frac{15x^2}{4} + \frac{15x}{4} + \frac{15}{8}\right] + c$

Answer: (B) $-e^{-2x}\left[\frac{x^5}{2} + \frac{5x^4}{4} + \frac{5x^3}{2} + \frac{15x^2}{4} + \frac{15x}{4} + \frac{15}{8}\right] + c$ · The council's preliminary key

Q600 TS EAMCET 2016 · 15 May · Offline MCQ

$$\int \frac{(x^2+1)}{x^4+7x^2+1}\,dx =$$

(A) $\frac{1}{3}\tan^{-1}\left(\frac{x^2-1}{3x}\right) + c$

(B) $\tan^{-1}\left(\frac{x^2-1}{x}\right) + c$

(C) $\frac{1}{3}\tan^{-1}\left(\frac{x^2-1}{x}\right) + c$

(D) $\frac{1}{\sqrt{3}}\tan^{-1}\left(\frac{x^2-1}{\sqrt{3}x}\right) + c$

Answer: (A) $\frac{1}{3}\tan^{-1}\left(\frac{x^2-1}{3x}\right) + c$ · Official TGCHE final key

Q601 TS EAMCET 2016 · 15 May · Offline MCQ

$$\int \frac{x^3}{\sqrt{1+x^2}}\,dx =$$

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

Answer: (C) $x^2\sqrt{1+x^2}-\frac{2}{3}(1+x^2)^{3/2}+c$ · Official TGCHE final key

Q602 TS EAMCET 2016 · 15 May · Offline MCQ

$\int \frac{dx}{\cos(x+4)\cos(x+2)} =$

(A) $\frac{1}{\sin 2}\log|\cos(x+4)^2|+c$
(B) $\frac{1}{2}\log\left|\frac{\sec(x+2)}{\sec(x+4)}\right|+c$
(C) $\frac{1}{\sin 2}\log\left|\frac{\sec(x+4)}{\sec(x+2)}\right|+c$
(D) $\log\left|\frac{\sec(x+4)}{\sec(x+2)}\right|+c$

Answer: (C) $\frac{1}{\sin 2}\log\left|\frac{\sec(x+4)}{\sec(x+2)}\right|+c$ · Official TGCHE final key

Q603 TS EAMCET 2016 · 15 May · Offline MCQ

$\int \frac{2x+2}{\sqrt{x^2-4x-5}}\,dx =$

(A) $\sqrt{x^2-4x-5}+\log\left|x+\sqrt{x^2-4x-5}\right|+c$
(B) $\log\left|\sqrt{x^2-4x-5}\right|+\sqrt{x^2-4x-5}+c$
(C) $\sqrt{x^2-4x-5}+6\log\left|(x-2)+\sqrt{x^2-4x-5}\right|+c$
(D) $2\sqrt{x^2-4x-5}+6\log\left|(x-2)+\sqrt{x^2-4x-5}\right|+c$

Answer: (D) $2\sqrt{x^2-4x-5}+6\log\left|(x-2)+\sqrt{x^2-4x-5}\right|+c$ · Official TGCHE final key

Q604 AP EAMCET 2016 · 29 Apr · Offline MCQ

If $\int x^3e^{5x}\,dx=\frac{e^{5x}}{5^4}(f(x))+c$, then $f(x)=$

(A) $\frac{x^3}{5}-\frac{3x^2}{5^2}+\frac{6x}{5^3}-\frac{6}{5^4}$
(B) $5x^3-5^2x^2+5^3x-6$
(C) $5^2x^3-15x^2+30x-6$
(D) $5^3x^3-75x^2+30x-6$

Answer: (D) $5^3x^3-75x^2+30x-6$ · The council's preliminary key

Q605 AP EAMCET 2016 · 29 Apr · Offline MCQ

$\int \frac{x}{(x^2+2x+2)^2}\,dx =$

(A) $\frac{x^2+2}{x^2+2x+2}-\frac{1}{2}\tan^{-1}(x+1)+c$

(B) $\frac{x^2+2}{2(x^2+2x+2)}-\frac{1}{2}\tan^{-1}(x-1)+c$

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

(D) $\frac{2(x-1)}{(x^2+2x+2)}+\frac{1}{2}\tan^{-1}(x+1)+c$

Answer: (C) $\frac{x^2-2}{4(x^2+2x+2)}-\frac{1}{2}\tan^{-1}(x+1)+c$ · The council's preliminary key

Q606 AP EAMCET 2016 · 29 Apr · Offline MCQ

If $\int \log(a^2+x^2)\,dx = h(x)+c$, then $h(x)=$

(A) $x\log(a^2+x^2)+2\tan^{-1}\left(\frac{x}{a}\right)$

(B) $x^2\log(a^2+x^2)+x+a\tan^{-1}\left(\frac{x}{a}\right)$

(C) $x\log(a^2+x^2)-2x+2a\tan^{-1}\left(\frac{x}{a}\right)$

(D) $x^2\log(a^2+x^2)+2x-a^2\tan^{-1}\left(\frac{x}{a}\right)$

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

Q607 AP EAMCET 2016 · 29 Apr · Offline MCQ

For $x>0$, if $\int (\log x)^5\,dx = x\left[A(\log x)^5+B(\log x)^4+C(\log x)^3+D(\log x)^2+E(\log x)+F\right]+$ constant, then $A+B+C+D+E+F=$

(A) -44

(B) -42

(C) -40

(D) -36

Answer: (A) -44 · The council's preliminary key

Q608 AP EAMCET 2014 · 22 May · Offline MCQ

$\int \frac{dx}{\sqrt{\sin^3 x\cos x}} = g(x)+c \Rightarrow g(x)=$

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

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

(C) $\frac{2}{\sqrt{\cot x}}$

(D) $\frac{2}{\sqrt{\tan x}}$

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

Q609 AP EAMCET 2014 · 22 May · Offline MCQ

If $\int \frac{dx}{(1+\sqrt{x})\sqrt{x-x^2}} = \frac{A\sqrt{x}}{\sqrt{1-x}} + \frac{B}{\sqrt{1-x}} + C$, where C is a real constant then $A+B=$

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

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

Q610 AP EAMCET 2014 · 22 May · Offline MCQ

For any integer $n \geq 2$, let $I_n = \int \tan^n x\, dx$. If $I_n = \frac{1}{a}\tan^{n-1} x - bI_{n-2}$ for $n \geq 2$, then the ordered pair $(a,b) =$

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

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

Q611 AP EAMCET 2014 · 22 May · Offline MCQ

If $\int \frac{(x^2-1)}{(x+1)^2\sqrt{x(x^2+x+1)}}dx = A\tan^{-1}\left(\sqrt{\frac{x^2+x+1}{x}}\right) + c$, in which c is a constant then $A=$

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

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

Q612 AP EAMCET 2013 · 10 May · Offline MCQ

$$\int e^x \left(\frac{2+\sin 2x}{1+\cos 2x}\right) dx =$$

(A) $e^x \cot x + c$
(B) $2e^x \sec^2 x + c$
(C) $e^x \cos 2x + c$
(D) $e^x \tan x + c$

Answer: (D) $e^x \tan x + c$ · The council's preliminary key

EdLoop EAPCET

Q613 AP EAMCET 2013 · 10 May · Offline MCQ

$\int \frac{x-\sin x}{1+\cos x}dx = x\tan\left(\frac{x}{2}\right) + p\log\left|\sec\left(\frac{x}{2}\right)\right| + c \Rightarrow p =$

(A) -4

(B) 4

(C) 2

(D) -2

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

Q614 AP EAMCET 2013 · 10 May · Offline MCQ

$\int \frac{dx}{x(\log x-2)(\log x-3)} = I + c \Rightarrow I =$

(A) $\frac{1}{x}\log\left|\frac{\log x-3}{\log x-2}\right|$

(B) $\log\left|\frac{\log x-3}{\log x-2}\right|$

(C) $\log\left|\frac{\log x-2}{\log x-3}\right|$

(D) $\log|(\log x-3)(\log x-2)|$

Answer: (B) $\log\left|\frac{\log x-3}{\log x-2}\right|$ · The council's preliminary key

Q615 AP EAMCET 2012 · 12 May · Offline MCQ

$\int \frac{dx}{x^2\sqrt{4+x^2}} =$

(A) $\frac{1}{4}\sqrt{4+x^2}+c$

(B) $\frac{-1}{4}\sqrt{4+x^2}+c$

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

(D) $\frac{9}{4x}\sqrt{4+x^2}+c$

Answer: (C) $\frac{-1}{4x}\sqrt{4+x^2}+c$ · Official APSCHE final key

Q616 AP EAMCET 2012 · 12 May · Offline MCQ

$\int \sec^2 x\,\mathrm{cosec}^4 x\,dx = -\frac{1}{3}\cot^3 x + k\tan x - 2\cot x + c \Rightarrow k =$

(A) 4

(B) 3

(C) 2

(D) 1

Answer: (D) 1 · Official APSCHE final key

EdLoop EAPCET

Q617 AP EAMCET 2012 · 12 May · Offline MCQ

$\int \frac{dx}{\sqrt{x-x^2}} =$

(A) $2\sin^{-1}\sqrt{x}+c$

(B) $2\sin^{-1}x+c$

(C) $2x\sin^{-1}x+c$

(D) $\sin^{-1}\sqrt{x}+c$

Answer: (A) $2\sin^{-1}\sqrt{x}+c$ · Official APSCHE final key

Q618 AP EAMCET 2011 · 8 May · Offline MCQ

$\int\left(\sqrt{\frac{a+x}{a-x}}+\sqrt{\frac{a-x}{a+x}}\right)dx =$

(A) $2\sin^{-1}\left(\frac{x}{a}\right)+c$

(B) $2a\sin^{-1}\left(\frac{x}{a}\right)+c$

(C) $2\cos^{-1}\left(\frac{x}{a}\right)+c$

(D) $2a\cos^{-1}\left(\frac{x}{a}\right)+c$

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

Q619 AP EAMCET 2011 · 8 May · Offline MCQ

If $\int \frac{\sin^8 x-\cos^8 x}{1-2\sin^2 x\cos^2 x}dx = A\sin 2x+B$, then $A =$

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

(B) -1

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

(D) 1

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

Q620 AP EAMCET 2011 · 8 May · Offline MCQ

$\int \frac{1+\cos 4x}{\cot x-\tan x}dx =$

(A) $-\frac{1}{4}\cos 4x+c$

(B) $\frac{1}{8}\cos 4x+c$

(C) $\frac{1}{4}\sin 4x+c$

(D) $-\frac{1}{8}\cos 4x+c$

Answer: (D) $-\frac{1}{8}\cos 4x+c$ · The council's preliminary key

EdLoop EAPCET

Q621 AP EAMCET 2010 · 30 May · Offline MCQ

$\int \frac{7x^8 + 8x^7}{(1 + x + x^8)^2}\, dx = f(x) + c \Rightarrow f(x) =$

(A) $\frac{x^8}{1 + x + x^8}$

(B) $28 \log(1 + x + x^8)$

(C) $\frac{1}{1 + x + x^8}$

(D) $\frac{-1}{1 + x + x^8}$

Answer: (A) $\frac{x^8}{1 + x + x^8}$ · Official APSCHE final key

Q622 AP EAMCET 2010 · 30 May · Offline MCQ

If $f_n(x) = \log \log \log \ldots\ldots \log x$ (log is repeated n-times), then $\int (x f_1(x) f_2(x) \ldots\ldots f_n(x))^{-1}\, dx =$

(A) $f_{n+1}(x) + c$

(B) $\frac{f_{n+1}(x)}{n+1} + c$

(C) $n f_n(x) + c$

(D) $\frac{f_n(x)}{n} + c$

Answer: (A) $f_{n+1}(x) + c$ · Official APSCHE final key

Q623 AP EAMCET 2010 · 30 May · Offline MCQ

$\int (1 - \cos x) \operatorname{cosec}^2 x\, dx = f(x) + c \Rightarrow f(x) =$

(A) $\tan \frac{x}{2}$

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

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

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

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

EdLoop EAPCET