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MATHEMATICS · EAPCET (EAMCET)

Area Under Curves

Previous Year Questions with answers

94 questions · **93** papers · **2010–2026** · newest paper first

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

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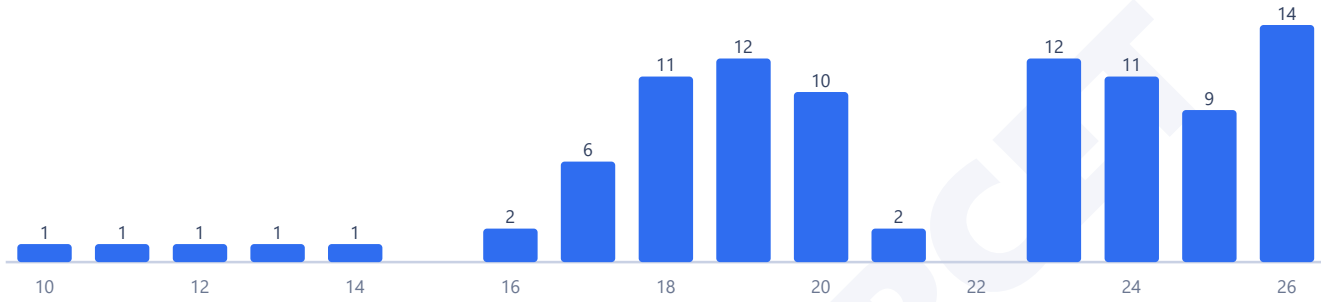
Chapter at a glance

0.7%	94	46 of 77	94 / 0
of Mathematics questions, 2022–2026	questions, 2010–2026	papers asked it, 2022–2026	MCQ / numerical, 2010–2026

Trend. Rising: 0.7 questions per paper in 2024–2026 against 0.4 in 2022–2023.

Questions per year



Counts are the questions we hold: 94 in 93 papers. 4 questions in this chapter came back in more than one paper.

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

Area Bounded by Curves	94

How often it comes up

Area Under Curves represents a focused geometric application of integral calculus with consistent examination representation. Across the historical timeline from 2010 through 2026, Area Under Curves contributed 94 questions across 149 evaluated exam papers, featuring in 93 sittings to record an average of 0.6 questions per paper and a 0.8 percent subject share. Modern test cycles between 2022 and 2026 reflect an identical general frequency: examiners set 46 questions across 77 sittings, with questions appearing in 46 papers to yield 0.6 questions per test and a 0.7 percent share. This volume places the chapter at rank 27 of 29 mathematics chapters.

The chapter does not appear in every sitting, and it was entirely absent from the 2022 exam cycle before returning regularly in following sessions. Across the three most recent testing years from 2024 to 2026, students encountered 34 questions across 46 papers (present in 34 papers, averaging 0.7 per test and a 0.9 percent share). In the preceding testing span from 2010 through 2021, the chapter provided 48 questions across 72 sittings (appearing in 47 papers, averaging 0.7 per test and a 0.8 percent share). Evaluating temporal movement, comparing early testing with the last three years shows the share is about the same, and comparing recent testing with the last three years also shows the share is about the same. At the regional level from 2022 to 2026, Andhra Pradesh sittings provided 31 questions across 48 papers (31 papers with questions, 0.6 per test, 0.8 percent share), while Telangana sittings delivered 15 questions across 29 papers (15 papers with questions, 0.5 per test, 0.6 percent share).

Most-asked topics

The curriculum groups all geometric quadrature questions under a single unified topic:

- **Area Bounded by Curves**: Comprising all 94 historical questions, with 46 appearing in recent examinations (tested through 2026). Coverage includes area enclosed between parabolas and lines, area bounded between two parabolas (y squared equals four a x and x squared equals four b y), region between polynomial curves and coordinate axes, area enclosed by absolute value functions, and logarithmic or exponential boundaries.

What the questions look like

Examiners test sketching skills, finding points of intersection, and setting up definite integrals with proper upper and lower functions.

A classic problem asks for the area enclosed between a parabola and a straight line, such as a downward parabola and an oblique line. Candidates locate the intersection abscissae, subtract the line equation from the parabola equation, and evaluate the definite integral. Another common format involves symmetric regions enclosed between two orthogonal parabolas, which can be evaluated instantly via Archimedean shortcut formulas. Problems with piecewise linear functions or modulus brackets require candidates to draw the region and sum areas of triangles or trapezoids geometrically rather than integrating by parts.

How to practise it

Memorize the standard shortcut formulas for common conic areas. The area enclosed between the parabolas y squared equals four a x and x squared equals four b y is sixteen a b divided by three. The area enclosed between the parabola y squared equals four a x and its chord line y equals m x is eight a squared divided by three m cubed.

When dealing with functions involving absolute values, plot the graphs on paper before integrating. For an expression like y equals modulus of x minus two plus modulus of x minus eight, the graph is a flat horizontal line segment between two and eight with symmetric sloping rays on either side. Integrating this as a trapezoid using basic Euclidean geometry saves significant time compared to computing multiple algebraic integrals. Always check whether integrating with respect to y is simpler than integrating with respect to x.

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Q1 AP EAPCET 2026 · 18 May · Shift 1 MCQ

The Area (in sq. units) of the region bounded by $x = 0, x = \frac{\pi}{2}$, X – axis, $y = \cos x$ and $y = \tan x$ is

(A) $\frac{\sqrt{5}-1}{2} + \frac{1}{2}\log\left(\frac{\sqrt{5}-1}{2}\right)$

(B) $\frac{3-\sqrt{5}}{2} + \log\left(\frac{\sqrt{5}-1}{2}\right)$

(C) $\frac{\sqrt{5}-1}{2} - \log\left(\frac{\sqrt{5}-1}{2}\right)$

(D) $\frac{3-\sqrt{5}}{2} + \frac{1}{2}\log\left(\frac{\sqrt{5}+1}{2}\right)$

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

Q2 AP EAPCET 2026 · 18 May · Shift 2 MCQ

The area (in sq. units) of the region bounded between the curve $y = x^2 + 5x + 1$ and the line $7x - y + 1 = 0$ is

(A) 2

(B) $3/4$

(C) $4/3$

(D) $2/5$

Answer: (C) $4/3$ · The council's preliminary key

Q3 AP EAPCET 2026 · 15 May · Shift 1 MCQ

A circle is passing through the ends of the latus rectum of a parabola $y^2 = 12x$ and has its centre at the vertex of the parabola. The area of the region lying inside the circle and outside the parabola in the 1st quadrant is

(A) $\frac{45}{2}\mathrm{Sin}^{-1}\left(\frac{1}{\sqrt{5}}\right) - 3$

(B) $\frac{45}{2}\mathrm{Sin}^{-1}\left(\frac{3}{\sqrt{5}}\right) + \frac{45}{2}\pi$

(C) $45\,\mathrm{Sin}^{-1}\left(\frac{1}{\sqrt{5}}\right) + 6$

(D) $45\,\mathrm{Sin}^{-1}\left(\frac{3}{\sqrt{5}}\right) + 6\pi$

Answer: (A) $\frac{45}{2}\mathrm{Sin}^{-1}\left(\frac{1}{\sqrt{5}}\right) - 3$ · The council's preliminary key

Q4 AP EAPCET 2026 · 15 May · Shift 2 MCQ

The area enclosed between the curves $y^2 = x$ and $y = |x|$ is

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

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

Q5 AP EAPCET 2026 · 14 May · Shift 1 MCQ

Area of the region (in sq. units) bounded by the curve $y = x^2 - 4$, the X-axis and the lines $x = -2, x = 3$ is

(A) 13
(B) $\frac{46}{3}$
(C) $\frac{32}{3}$
(D) 11

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

Q6 AP EAPCET 2026 · 14 May · Shift 2 MCQ

The area of the region enclosed between the curve $y = log_e(x + e)$ and the coordinate axes is

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

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

Q7 AP EAPCET 2026 · 13 May · Shift 1 MCQ

The area of the region bounded by the curve $y = x^2 + x$, the lines $y = x$, $x = 1$ and $y = 2$ is

(A) $\frac{12}{5}$
(B) $\frac{7}{2}$
(C) $\frac{4}{5}$
(D) $\frac{1}{3}$

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

Q8 AP EAPCET 2026 · 13 May · Shift 2 MCQ

The area (in sq. units) of the region bounded by the curve $y = 2x - x^2$ and the straight line $y = -x$ is

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(A) $\frac{35}{6}$
(B) $\frac{24}{5}$
(C) $\frac{16}{3}$
(D) $\frac{9}{2}$

Answer: (D) $\frac{9}{2}$ · The council's preliminary key

Q9 AP EAPCET 2026 · 12 May · Shift 1 MCQ

The area of the region bounded by the curve $xy = -a$ $(a > 1)$ and the lines $x = -a$ and $y = a$ is

(A) $a(a - 1 - \log a)$
(B) $a(a + 1 + \log a)$
(C) $a^2 - a + \log a$
(D) $a^2 - a - \log a$

Answer: (A) $a(a - 1 - \log a)$ · The council's preliminary key

Q10 TS EAPCET 2026 · 11 May · Shift 2 MCQ

The area of the region bounded by the curves $y = x^2 + 1$, $x = y^2 + 1$, X-axis, Y-axis and $x = 2$ (in Sq. units) is

(A) $\frac{13}{3}$
(B) 4
(C) 6
(D) $\frac{15}{2}$

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

Q11 TS EAPCET 2026 · 10 May · Shift 1 MCQ

Area of the region bounded by the curves $y = 2^x$, $y^2 = 4x$ and the lines $x = \frac{1}{2}$, $x = 1$ is

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

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

Q12 TS EAPCET 2026 · 10 May · Shift 2 MCQ

A straight line $3x + y - 3 = 0$ cuts the parabola $x^2 - 2x + y + 1 = 0$ in two points. The area of the region enclosed by these two curves is

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(A) $\frac{9}{3}$
(B) $\frac{9}{2}$
(C) $\frac{25}{6}$
(D) $\frac{29}{6}$

Answer: (B) $\frac{9}{2}$ · The council's preliminary key

Q13 TS EAPCET 2026 · 9 May · Shift 1 MCQ

The area of the region bounded by the curve $y = |x-2| + |x-8|$, X-axis and the lines $x = 0$, $x = 10$ is

(A) 50
(B) 68
(C) 100
(D) 98

Answer: (B) 68 · The council's preliminary key

Q14 TS EAPCET 2026 · 9 May · Shift 2 MCQ

The area of the region bounded by the curves $y = x^2 - 3x + 3$ and $y = 2x^2 - 1$ is

(A) $\frac{403}{6}$
(B) 27
(C) 19
(D) $\frac{125}{6}$

Answer: (D) $\frac{125}{6}$ · The council's preliminary key

Q15 AP EAPCET 2025 · 27 May · Shift 1 MCQ

The area (in sq. units) of the region given by $R = \left\{(x, y) : \frac{y^2}{2} \leq x \leq y + 4\right\}$ is

(A) 16
(B) 18
(C) 24
(D) 30

Answer: (B) 18 · The council's preliminary key

Q16 AP EAPCET 2025 · 26 May · Shift 2 MCQ

The area of the region (in sq.units) bounded by the curves $x^2 + y^2 = 16$ and $y^2 = 6x$ is

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

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

Q17 AP EAPCET 2025 · 24 May · Shift 1 MCQ

The area (in sq.units) of the region bounded by the curves $y = x^2$ and $y = 8 - x^2$ is

(A) $\frac{32}{3}$
(B) $\frac{16}{3}$
(C) $\frac{64}{3}$
(D) $\frac{128}{3}$

Answer: (C) $\frac{64}{3}$ · The council's preliminary key

Q18 AP EAPCET 2025 · 23 May · Shift 1 MCQ

The area (in sq. units) of the region bounded by the lines $x = 0$, $x = \frac{\pi}{2}$ and $f(x) = \sin x$, $g(x) = \cos x$ is

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

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

Q19 AP EAPCET 2025 · 23 May · Shift 2 MCQ

Area of the region (in sq. units) bounded by the curve $y = x^2 - 5x + 4$, $x = 0$, $x = 2$ and the X-axis is

(A) $\frac{8}{3}$
(B) 3
(C) 5
(D) $\frac{5}{2}$

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

Q20 AP EAPCET 2025 · 22 May · Shift 1 MCQ

The area of the region lying between the curves $y = \sqrt{4 - x^2}$, $y^2 = 3x$ and the Y-axis is

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

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

Q21 AP EAPCET 2025 · 21 May · Shift 2 MCQ

The area of the region (in sq. units) enclosed between the curves $y=|x|$, $y=[x]$ and the ordinates $x=-1$, $x=0$, $x=1$ is

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

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

Q22 TS EAPCET 2025 · 4 May · Shift 2 MCQ

The area of the region bounded by $y=x^3$, x-axis, $x=-2$ and $x=4$ is

(A) 64
(B) $\frac{81}{4}$
(C) $\frac{66}{5}$
(D) 68

Answer: (D) 68 · The council's preliminary key

Q23 TS EAPCET 2025 · 2 May · Shift 2 MCQ

The area of the region bounded by the curves $y=x^3$, $y=x^2$ and the lines $x=0$ and $x=2$ is

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

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

Q24 AP EAPCET 2024 · 23 May · Shift 1 MCQ

If (α,β) is the stationary point of the curve $y=2x-x^2$, then the area bounded by the curves $y=2^x, y=2x-x^2, x=0$ and $x=\alpha$ is

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

Answer: (D) $\frac{1}{\log 2}-\frac{2}{3}$ · Checked by our team

Q25 AP EAPCET 2024 · 22 May · Shift 1 MCQ

The area (is sq. units) bounded by the curves $x=y^2$ and $x=3-2y^2$ is

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

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

Q26 AP EAPCET 2024 · 21 May · Shift 1 MCQ

The area of the region under the curve $y=|\sin x-\cos x|, 0\le x\le\frac{\pi}{2}$ and above x-axis, is (in square units)

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

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

Q27 AP EAPCET 2024 · 21 May · Shift 2 MCQ

Area of the region enclosed by the curves $3x^2-y^2-2xy+4x+1=0$ and $3x^2-y^2-2xy+6x+2y=0$ is

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

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

Q28 AP EAPCET 2024 · 20 May · Shift 1 MCQ

Area of the region (in square units) enclosed by the curves $y^2=8(x+2)$, $y^2=4(1-x)$ and the Y-axis is

(A) $\frac{8}{3}(5-3\sqrt{2})$
(B) $\frac{8}{3}(\sqrt{2}-1)$
(C) $\frac{8}{3}(3-\sqrt{2})$
(D) $\frac{4}{3}(\sqrt{2}+1)$

Answer: (A) $\frac{8}{3}(5-3\sqrt{2})$ · The council's preliminary key

Q29 AP EAPCET 2024 · 19 May · Shift 2 MCQ

The area (in sq. units) of the smaller region lying above the X-axis and bounded between the circle $x^2+y^2=2ax$ and the parabola $y^2=ax$ is

(A) $2a^2\left(\frac{\pi}{4}-\frac{2}{3}\right)$
(B) $a^2\left(\frac{\pi}{4}-\frac{2}{3}\right)$
(C) $a^2\left(\frac{\pi}{4}+\frac{2}{3}\right)$
(D) $a^2\left(\frac{\pi^2}{4}-\frac{1}{3}\right)$

Answer: (B) $a^2\left(\frac{\pi}{4}-\frac{2}{3}\right)$ · The council's preliminary key

Q30 AP EAPCET 2024 · 18 May · Shift 1 MCQ

The area of the region (in sq. units) enclosed by the curve $y=x^3-19x+30$ and the X-axis is

(A) $\frac{167}{2}$
(B) $\frac{517}{2}$
(C) 36
(D) 72

Answer: (B) $\frac{517}{2}$ · The council's preliminary key

Q31 TS EAPCET 2024 · 11 May · Shift 1 MCQ

The area of the region (in sq. units) enclosed by the curves $y=8x^3-1$, $y=0$, $x=-1$ and $x=1$ is

(A) $\frac{15}{4}$
(B) $\frac{15}{8}$
(C) $\frac{19}{4}$
(D) $\frac{19}{8}$

Answer: (C) $\frac{19}{4}$ · The council's preliminary key

Q32 TS EAPCET 2024 · 10 May · Shift 1 MCQ

The area of the region enclosed by the curves $y^2=4(x+1)$ and $y^2=5(x-4)$ is

(A) $\frac{280}{3}$
(B) 150
(C) 140
(D) $\frac{200}{3}$

Answer: (D) $\frac{200}{3}$ · The council's preliminary key

Q33 TS EAPCET 2024 · 10 May · Shift 2 MCQ

If the area of the region enclosed by the curve $ay = x^2$ and the line $x + y = 2a$ is ka^2, then $k =$

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

Answer: (B) $\frac{9}{2}$ · The council's preliminary key

Q34 TS EAPCET 2024 · 9 May · Shift 1 MCQ

Area of the region enclosed between the curves $y^2 = 4(x + 7)$ and $y^2 = 5(2 - x)$ is

(A) $\frac{32\sqrt{2}}{3}$
(B) $\frac{8}{3}$
(C) $\frac{1}{6}$
(D) $24\sqrt{5}$

Answer: (D) $24\sqrt{5}$ · The council's preliminary key

Q35 AP EAPCET 2023 · 18 May · Shift 1 MCQ

The area (in sq. units) bounded by the curves $y = \frac{8}{x}$, $y = 2x$ and $x = 4$ is

(A) $12 - 8\log 2$
(B) $12 + 8\log 2$
(C) $12 - 8\log 4$
(D) $12 + 8\log 4$

Answer: (A) $12 - 8\log 2$ · The council's preliminary key

Q36 AP EAPCET 2023 · 18 May · Shift 2 MCQ

The area bounded by $y - 1 = -|x|$ and $y + 1 = |x|$ is

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

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

Q37 AP EAPCET 2023 · 17 May · Shift 1 MCQ

The area (in sq. units) bounded by $x = 4$, $y = -4$ and $y = x$ is

(A) 48
(B) 32
(C) 24
(D) 16

Answer: (B) 32 · The council's preliminary key

Q38 AP EAPCET 2023 · 17 May · Shift 2 MCQ

The area bounded by the curve $y = x^2$ and $y - 6 = -|x|$ is

(A) $\frac{37}{4}$
(B) $\frac{22}{3}$
(C) $\frac{44}{3}$
(D) $\frac{38}{3}$

Answer: (C) $\frac{44}{3}$ · The council's preliminary key

Q39 AP EAPCET 2023 · 16 May · Shift 1 MCQ

The area bounded by the curves $y - 1 = \cos x$, $y = \sin x$ and the X – axis between $x = 0$ and $x = \pi$ is

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

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

Q40 AP EAPCET 2023 · 16 May · Shift 2 MCQ

The area bounded by the curve $x = \log(|y|)$, the lines $x = -1$ and $x = 0$ is

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(A) $1 - e^{-1}$

(B) $1 - e$

(C) $2(1 - e)$

(D) $2(1 - e^{-1})$

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

Q41 AP EAPCET 2023 · 15 May · Shift 1 MCQ

The area (in sq.units) bounded by the curves $x^2 = 9y$, $(x - 6)^2 = 9y$ and the X- axis is

(A) 0

(B) 1

(C) 2

(D) 4

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

Q42 AP EAPCET 2023 · 15 May · Shift 2 MCQ

The area (in sq. units) of the region bounded by the curves $y = 4|\cos x|$ and $y = -|\cos x|$ from $x = -\frac{\pi}{2}$ to $\frac{\pi}{2}$ is

(A) 6

(B) 8

(C) 12

(D) 10

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

Q43 TS EAMCET 2023 · 14 May · Shift 1 MCQ

The area (in square units) of the region bounded by the curve $y = |\sin 2x|$ and the X-axis in $[0, 2\pi]$ is

(A) 0

(B) 3

(C) 4

(D) 1

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

Q44 TS EAMCET 2023 · 14 May · Shift 2 MCQ

The area (in Sq. units) of the region bounded by the circle $x^2 + y^2 = 64$, positive X – axis and the line $y = \sqrt{3}x$ is

(A) $\frac{16\pi}{3}$
(B) $\frac{8\pi}{3}$
(C) $\frac{64\pi}{3}$
(D) $\frac{32\pi}{3}$

Answer: (D) $\frac{32\pi}{3}$ · The council's preliminary key

Q45 TS EAMCET 2023 · 13 May · Shift 1 MCQ

Area of the region bounded by the curve $y = 2 - x - 3x^2$, the X-axis, the Y-axis and the line $x = -2$ is

(A) 2
(B) $\frac{44}{27}$
(C) $\frac{9}{2}$
(D) 5

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

Q46 TS EAMCET 2023 · 12 May · Shift 2 MCQ

The area (in sq. units) bounded by the curve $y = 2x - x^2$ and the line $y = -x$ is

(A) $\frac{9}{2}$
(B) $\frac{11}{2}$
(C) $\frac{16}{3}$
(D) $\frac{22}{5}$

Answer: (A) $\frac{9}{2}$ · The council's preliminary key

Q47 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

If the area of the region enclosed by the curve $x^2 + y^2 = 16$ and the lines $x = 2$ and $x = 3$ is $\left(3\sqrt{7} - 4\sqrt{3} - \frac{8\pi}{3} + k\right)$ sq.units, then 'k' equals _____

(A) $16\,\mathrm{Sin}^{-1}\left(\frac{3}{4}\right)$
(B) $8\,\mathrm{Sin}^{-1}\left(\frac{3}{4}\right)$
(C) $4\,\mathrm{Sin}^{-1}\left(\frac{3}{4}\right)$
(D) $2\,\mathrm{Sin}^{-1}\left(\frac{3}{4}\right)$

Answer: (A) $16\,\mathrm{Sin}^{-1}\left(\frac{3}{4}\right)$ · The council's preliminary key

Q48 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

The area enclosed by the curves $y = x|x|$, $x = -1$ and $x = 1$ is _____ sq. units.

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

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

Q49 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

Calculate the area enclosed by the curves $x^2 = 2 - y$, $x^2 = y$

(A) $\frac{2}{3}$
(B) $\frac{4}{3}$
(C) $\frac{8}{3}$
(D) $\frac{11}{3}$

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

Q50 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

If the area bounded by the parabola $y^2 = 16ax$ and the line $y = 4mx$ is $\frac{a^2}{12}$ sq. units, then the value of 'm' is

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

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

Q51 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

If the area lying in the first quadrant and bounded by the circle $x^2 + y^2 - 4x = 0$, the parabola $y^2 = x$ and the X-axis is A, then $6A - 9\sqrt{3} =$

(A) π
(B) 2π
(C) 3π
(D) 4π

Answer: (D) 4π · Official TGCHE final key

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Q52 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

The area (in sq. units) bounded by the parabola $y = x^2 + 3$, the tangent to the parabola at $(3, 12)$ and the coordinate axes and lying in the first quadrant is

(A) 6
(B) 30
(C) 18
(D) 24

Answer: (A) 6 · Official TGCHE final key

Q53 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

The area (in sq. units) of the portion lying above the X-axis and enclosed between the curves $y^2 = 2ax - x^2$ and $y^2 = ax$ is

(A) $a^2\left(\frac{-\pi}{2} + \frac{2}{3}\right)$
(B) $a^2\left(\frac{2}{3} - \frac{\pi}{4}\right)$
(C) $a^2\left(\frac{\pi}{4} - \frac{2}{3}\right)$
(D) $a^2\left(\frac{\pi}{4} + \frac{2}{3}\right)$

Answer: (C) $a^2\left(\frac{\pi}{4} - \frac{2}{3}\right)$ · Official TGCHE final key

Q54 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

The area (in sq. units) enclosed by the curves $y = 2x - x^2$ and $y = x^2 - 2x - 6$ is

(A) $\frac{64}{3}$
(B) $\frac{8}{3}$
(C) $\frac{128}{3}$
(D) $\frac{16}{3}$

Answer: (A) $\frac{64}{3}$ · Official TGCHE final key

Q55 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

If the area of the region bounded by $y = \cos x$, $y = \sin x$, $x = \frac{\pi}{4}$ and $x = \pi$ is bisected by the line $x = a$, then $\sin\left(a + \frac{\pi}{4}\right) =$

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

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

Q56 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

The area (in square units) of the region enclosed between the parabola $y^2 = 2x$ and the line $y = 4x - 1$ is

(A) $\frac{9}{32}$
(B) $\frac{7}{23}$
(C) $\frac{16}{3}$
(D) $\frac{15}{4}$

Answer: (A) $\frac{9}{32}$ · Official TGCHE final key

Q57 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

The larger of the two areas into which the circle $x^2 + y^2 = 16a^2$ is divided by the parabola $y^2 = 6ax$ is

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

Answer: (A) $\frac{4a^2}{3}(8\pi - \sqrt{3})$ · Official TGCHE final key

Q58 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

The area (in square units) bounded by the curves $|x| = 2$, $|y| = 2$ and $xy \leq \frac{1}{2}$ is

(A) $9 + 3\log 2$
(B) $3 + \log 2$
(C) $2 + \log 3$
(D) $8 + 2\log 3$

Answer: (A) $9 + 3\log 2$ · Official TGCHE final key

Q59 TS EAMCET 2019 · 6 May · Shift 1 MCQ

The area (in square units) of the region bounded by the curve $y = |\sin 2x|$ and X-axis in $[0, 2\pi]$ is

(A) 0
(B) 1
(C) 3
(D) 4

Answer: (D) 4 · Official TGCHE final key

Q60 TS EAMCET 2019 · 4 May · Shift 2 MCQ

Area of the region (in square units) bounded by the curve $y = x^2 + 4$ and the line $y = 5x - 2$ is

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

Answer: (D) $\frac{1}{6}$ · Official TGCHE final key

Q61 TS EAMCET 2019 · 3 May · Shift 1 MCQ

Area of the region (in square units) bounded by the curves $y = \sqrt{x}$, $x = \sqrt{y}$ and the lines $x = 1$, $x = 4$ is

(A) $\frac{8}{3}$
(B) $\frac{49}{3}$
(C) $\frac{16}{3}$
(D) $\frac{14}{3}$

Answer: (B) $\frac{49}{3}$ · Official TGCHE final key

Q62 TS EAMCET 2019 · 3 May · Shift 2 MCQ

The area of the region (in square units) bounded by the curves $y = x^3$, $y = x$, and $-1 \leq x \leq 1$, is

(A) $\frac{1}{4}$
(B) $\frac{1}{2}$
(C) $\frac{3}{4}$
(D) $\frac{5}{6}$

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

Q63 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

The area (in sq.units) enclosed by the loop of the curve $ay^2 = x^2(a - x),\ (a > 0)$ is

(A) $2\pi a^2$
(B) $\frac{\pi}{3}a^2$
(C) $\frac{4}{15}a^2$
(D) $\frac{8}{15}a^2$

Answer: (D) $\frac{8}{15}a^2$ · Official APSCHE final key

Q64 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

If the area of the region bounded by the curves $y = x^2$ and $x = y^2$ is k, then the area of the region bounded by the curves $\frac{x+\sqrt{3}y}{2} = \left(\frac{\sqrt{3}x-y}{2}\right)^2$ and $\frac{\sqrt{3}x-y}{2} = \left(\frac{x+\sqrt{3}y}{2}\right)^2$ is

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

Answer: (C) k · Official APSCHE final key

Q65 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

The area (in sq. units) bounded by $x^2 = y,\ y = x + 2$ and the X-axis is

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

Answer: (C) $\frac{5}{6}$ · Official APSCHE final key

Q66 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

The area (in sq.units) enclosed by the curves $y = \sin x + \cos x$ and $y = |\cos x - \sin x|$ over the interval $\left[0, \frac{\pi}{2}\right]$ is

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

Answer: (B) $4 - 2\sqrt{2}$ · Official APSCHE final key

Q67 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

The curve $y = ax^2 + bx$ passes through the point $(1, 2)$ and lies above the X-axis for $0 \le x \le 8$. If the area enclosed by this curve, the X-axis and the line $x = 6$ is 108 square units, then $2b - a =$

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

Answer: (B) 0 · Official APSCHE final key

Q68 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

The area (in sq. units) bounded by the curve $y = x^2 + 2x + 1$ and the tangent to it at $(1, 4)$ and the Y - axis is

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

Answer: (A) $\frac{1}{3}$ · Official APSCHE final key

Q69 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

If the area of the circle $x^2 + y^2 = 2$ is divided into two parts by the parabola $y = x^2$, then the area (in sq. units) of the larger part is

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

Answer: (A) $\frac{3\pi}{2} - \frac{1}{3}$ · Official APSCHE final key

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Q70 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

The area (in square units) bounded by $y = \mathrm{Tan}^{-1}x$, $y = \mathrm{Cot}^{-1}x$ and the Y-axis, is

(A) $\log_e 4$
(B) $\log_e 2$
(C) $\log_e 3$
(D) $\log_e 5$

Answer: (B) $\log_e 2$ · Official APSCHE final key

Q71 TS EAMCET 2018 · 7 May · Shift 1 MCQ

The area of the region bounded by $y = |x|$ and $y = 1 - |x|$ is

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

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

Q72 TS EAMCET 2018 · 5 May · Shift 1 MCQ

The area bounded by the curves $y = 2x^2,\ y = \text{Max}\{x - [x],\ x + |x|\}$ and the lines $x = 0,\ x = 2$ (in square units), is

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

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

Q73 TS EAMCET 2018 · 5 May · Shift 2 MCQ

The area enclosed by the curves $y = 8x - x^2$ and $8x - 4y + 11 = 0$ is

(A) $\frac{125}{6}$
(B) $\frac{32}{3}$
(C) 36
(D) $\frac{9}{2}$

Answer: (A) $\frac{125}{6}$ · The council's preliminary key

Q74 TS EAMCET 2018 · 4 May · Shift 1 MCQ

The area enclosed (in square units) by the curve $y = x^4 - x^2$, the X-axis and the vertica[l] lines passing through the two minimum points of the curve is

(A) $\frac{48\sqrt{2}}{5}$
(B) $\frac{5}{48\sqrt{2}}$
(C) $\frac{7}{60\sqrt{2}}$
(D) $\frac{7}{30\sqrt{2}}$

Answer: (D) $\frac{7}{30\sqrt{2}}$ · The council's preliminary key

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Q75 TS EAMCET 2018 · 4 May · Shift 2 MCQ

The area bounded by the curve $y = x^3 - 3x^2 + 2x$ and the X-axis is (in square units)

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

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

Q76 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

The area (in square units) bounded by the curves $y = 2x^2$ and $y = \text{Max}\{x - [x], x + |x|\}$ in between the lines $x = 0$ and $x = 2$ is

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

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

Q77 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

The area (in sq. units) of the region bounded by the curves $y = x \log x$ and $y = 2x - 2x^2$ is

(A) $\frac{1}{12}$
(B) $\frac{7}{6}$
(C) $\frac{7}{3}$
(D) $\frac{7}{12}$

Answer: (D) $\frac{7}{12}$ · The council's preliminary key

Q78 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

The area (in sq. units) of the region lying in the first quadrant and enclosed by the X-axis, the straight line $x - \sqrt{3}y = 0$ and the circle $x^2 + y^2 = 4$, is

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

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

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Q79 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

The area (in sq.units) between the curve $y^2 = 8x$ and its latus rectum is

(A) $\frac{32}{3}$
(B) $\frac{64}{3}$
(C) $\frac{16}{3}$
(D) $\frac{8\sqrt{2}}{3}$

Answer: (A) $\frac{32}{3}$ · The council's preliminary key

Q80 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

The area (in sq. units) of the region bounded by the X-axis and the curve $y = 1 - x - 6x^2$ is

(A) $\frac{125}{216}$
(B) $\frac{125}{512}$
(C) $\frac{25}{216}$
(D) $\frac{25}{512}$

Answer: (A) $\frac{125}{216}$ · The council's preliminary key

Q81 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

OABC is a unit square where O is the origin and $B = (1, 1)$. The curves $y^2 = x$ and $x^2 = y$ divide the area of the square into three parts OABO, OBO and OBCO. If a_1, a_2, a_3 are the areas (in sq. units) of these parts respectively, then $a_1 + 2a_2 + 3a_3 =$

(A) 1
(B) 2
(C) 6
(D) 64

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

Q82 TS EAMCET 2017 · 12 May · Offline MCQ

The area of the region bounded by the curves $x = y^2 - 2$ and $x = y$ is

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

Answer: (C) $\frac{9}{2}$ · The council's preliminary key

Q83 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

The area (in sq.units) enclosed between the curves $y = x^2$ and $y = |x|$ is

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

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

Q84 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

The area (in square units) enclosed between the curves $y = \sin x$ and $y = \cos x$ for $\frac{\pi}{4} \leq x \leq \frac{5\pi}{4}$ is

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

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

Q85 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

The area (in sq.units) of the region bounded by the parabolas $y^2 = 4x$ and $y^2 = 4(4 - x)$ is

(A) $\frac{7}{4} - \sqrt{2}$
(B) $2(\sqrt{2} - 1)$
(C) $\frac{32\sqrt{2}}{3}$
(D) $\frac{8}{3}$

Answer: (C) $\frac{32\sqrt{2}}{3}$ · The council's preliminary key

Q86 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

The area of the region that is common to the circle $x^2 + y^2 = 16a^2$ and the parabola $y^2 = 6ax$ is

(A) $\frac{4a^2}{3}\left(4\pi + \sqrt{3}\right)$
(B) $\frac{2a^2}{3}\left(3\pi + \sqrt{3}\right)$
(C) $\frac{4a^2}{3}\left(2\pi + \sqrt{2}\right)$
(D) $\frac{2a^2}{3}\left(2\pi + \sqrt{3}\right)$

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

Q87 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

The area (in sq. units) bounded by the curve $x^2 + 2x + y - 3 = 0$, the X-axis and the tangent at the point where the curve meets the Y-axis is

(A) $\frac{7}{10}$
(B) $\frac{7}{12}$
(C) $\frac{6}{11}$
(D) $\frac{5}{11}$

Answer: (B) $\frac{7}{12}$ · The council's preliminary key

Q88 TS EAMCET 2016 · 15 May · Offline MCQ

If the area bounded by the curves $y = ax^2$ and $x = ay^2$, $(a > 0)$ is 3 sq. units, then the value of a is

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

Answer: (B) $\frac{1}{3}$ · Official TGCHE final key

Q89 AP EAMCET 2016 · 29 Apr · Offline MCQ

The area included between the parabola $y = \frac{x^2}{4a}$ and the curve $y = \frac{8a^3}{(x^2 + 4a^2)}$ is

(A) $a^2\left(2\pi + \frac{2}{3}\right)$
(B) $a^2\left(2\pi - \frac{8}{3}\right)$
(C) $a^2\left(\pi + \frac{4}{3}\right)$
(D) $a^2\left(2\pi - \frac{4}{3}\right)$

Answer: (D) $a^2\left(2\pi - \frac{4}{3}\right)$ · The council's preliminary key

Q90 AP EAMCET 2014 · 22 May · Offline MCQ

The area (in square units) of the region bounded by $x = -1$, $x = 2$, $y = x^2 + 1$ and $y = 2x - 2$ is

(A) 10
(B) 7
(C) 8
(D) 9

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

Q91 AP EAMCET 2013 · 10 May · Offline MCQ

The area (in square units) bounded by the curves $x = -2y^2$ and $x = 1 - 3y^2$ is

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

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

Q92 AP EAMCET 2012 · 12 May · Offline MCQ

The area (in square units) bounded by the curves $y^2 = 4x$ and $x^2 = 4y$ is

(A) $\frac{64}{3}$
(B) $\frac{16}{3}$
(C) $\frac{8}{3}$
(D) $\frac{2}{3}$

Answer: (B) $\frac{16}{3}$ · Official APSCHE final key

Q93 AP EAMCET 2011 · 8 May · Offline MCQ

The area (in square units) of the region bounded by the curves $x = y^2$ and $x = 3 - 2y^2$ is

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

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

Q94 AP EAMCET 2010 · 30 May · Offline MCQ

The area (in square units) of the region enclosed by the two circles $x^2 + y^2 = 1$ and $(x-1)^2 + y^2 = 1$ is :

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

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

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

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

Answer: (D) $\frac{2\pi}{3}-\frac{\sqrt{3}}{2}$ · Official APSCHE final key

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