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MATHEMATICS · EAPCET (EAMCET)

Hyperbola

Previous Year Questions with answers

190 questions · **143** papers · **2010–2026** · newest paper first

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

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

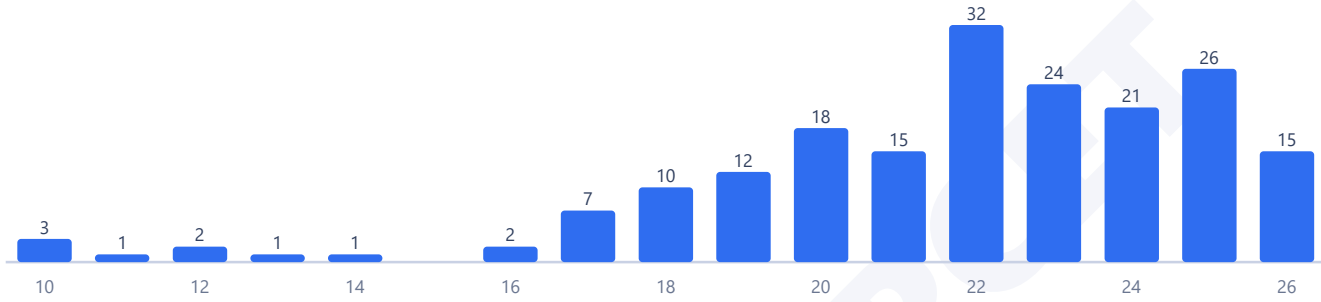
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Chapter at a glance

1.9%	190	76 of 77	190 / 0
of Mathematics questions, 2022–2026	questions, 2010–2026	papers asked it, 2022–2026	MCQ / numerical, 2010–2026

Trend. Falling: 1.3 questions per paper in 2024–2026 against 1.8 in 2022–2023.

Questions per year



Counts are the questions we hold: 190 in 143 papers. 2 questions in this chapter came back in more than one paper.

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

Standard Forms	116
Tangents, Normals & Chords	74

How often it comes up

Hyperbola serves as the open-branch conic complement to the ellipse in the coordinate geometry curriculum. Over the complete testing archive from 2010 through 2026, Hyperbola provided 190 questions across 149 evaluated exam papers, appearing in 143 sittings to maintain an average of 1.3 questions per paper and a 1.6 percent subject share. In contemporary examination testing between 2022 and 2026, the chapter delivered 118 questions across 77 sittings, with questions appearing in 76 papers to yield 1.5 questions per test and a 1.9 percent subject share. This ranks Hyperbola at position 20 among the 29 mathematics chapters.

The chapter has appeared in every single examination year, missing only one paper out of 77 in the modern timeframe. Over the three most recent testing years from 2024 to 2026, candidates answered 62 questions across 46 papers (present in 45 papers, averaging 1.3 questions per test and a 1.7 percent share). During the older examination epoch from 2010 through 2021, the chapter supplied 72 questions across 72 sittings (appearing in 67 papers, averaging 1.0 per test and a 1.3 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. Across the two regional boards between 2022 and 2026, Andhra Pradesh contributed 82 questions across 48 papers (47 papers with questions, 1.7 per test, 2.1 percent share), while Telangana contributed 36 questions across 29 papers (present in all 29 papers, 1.2 per test, 1.6 percent share).

Most-asked topics

Questions in this unit divide across two main coordinate geometry sections:

- **Standard Forms**: Supplying 116 total questions, with 70 appearing in recent testing (tested through 2026). Key concepts encompass standard equations (x squared over a squared minus y squared over b squared equals one), conjugate hyperbola (negative x squared over a squared plus y squared over b squared equals one), eccentricity formula (b squared equals a squared times e squared minus one), relationship between eccentricities of conjugate

hyperbolas (one over e one squared plus one over e two squared equals one), rectangular hyperbolas (eccentricity equals square root of two), asymptotes, and auxiliary circles.

- **Tangents, Normals & Chords**: Accounting for 74 total questions, with 48 set in modern examinations (tested through 2026). Coverage includes tangent in slope form (y equals m x plus or minus square root of a squared m squared minus b squared), director circle (x squared plus y squared equals a squared minus b squared), point of contact coordinates, normal equations, and common tangents with circles or confocal ellipses.

What the questions look like

Examiners test conjugate hyperbola relations, rectangular hyperbola properties, and tangent slopes.

A very frequent problem presents a hyperbola along with its conjugate, requiring students to exploit the harmonic identity connecting their eccentricities to solve for an unknown axis dimension. Another recurring question type features a rectangular hyperbola x squared minus y squared equals a squared or x y equals c squared, asking for intercepts of the tangent and normal on the coordinate axes. Problems on tangents often ask for the slope of lines tangent to both a hyperbola and an intersecting circle, or ask candidates to identify the director circle, noting that real perpendicular tangents exist only when a is strictly greater than b.

How to practise it

Master the structural formulas of standard and conjugate hyperbolas. For the standard hyperbola x squared over a squared minus y squared over b squared equals one, the transverse axis lies along the x-axis with length two a, conjugate axis length two b, foci at (plus or minus a e, zero), and eccentricity e equals square root of one plus b squared over a squared. For the conjugate hyperbola, the transverse axis lies along the y-axis, foci are at (zero, plus or minus b e prime), and e prime equals square root of one plus a squared over b squared.

Memorize the fundamental identity connecting the eccentricities of any hyperbola and its conjugate: one divided by e squared plus one divided by e prime squared equals one. Remember that a rectangular hyperbola has equal semi-axes a equals b, which immediately forces its eccentricity to equal square root of two and makes its asymptotes mutually perpendicular. The condition for y equals m x plus c to touch the standard hyperbola is c squared equals a squared m squared minus b squared, requiring a squared m squared to be greater than b squared.

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Q1 AP EAPCET 2026 · 18 May · Shift 1 MCQ

If C is the centre of the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ and the tangent drawn at any point P on the hyperbola meets the lines $bx - ay = 0$ and $bx + ay = 0$ at Q and R respectively, then $CQ \cdot CR =$

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

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

Q2 AP EAPCET 2026 · 18 May · Shift 2 MCQ

A normal is drawn to the hyperbola $9x^2 - 16y^2 = 144$ at one of the ends of its latus rectum. If that end lies in the third quadrant and the equation of the normal is $ax + by + c = 0$, then $\frac{b+c}{a} =$

(A) $\frac{44}{25}$
(B) $\frac{84}{25}$
(C) $\frac{55}{16}$
(D) $\frac{145}{16}$

Answer: (D) $\frac{145}{16}$ · The council's preliminary key

Q3 AP EAPCET 2026 · 15 May · Shift 1 MCQ

If d_1 and d_2 are the distances of the foci of the hyperbola $4x^2 - 9y^2 - 16x + 54y - 101 = 0$ from the point $(2, -3)$, then $d_1 + d_2 =$

(A) 10
(B) 14
(C) 12
(D) 16

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

Q4 AP EAPCET 2026 · 15 May · Shift 2 MCQ

Consider the Hyperbola $S \equiv \frac{x^2}{25} - \frac{y^2}{16} - 1 = 0$. Let B, B' be the ends of the transverse axis of the conjugate hyperbola of $S = 0$. If C is the circle with B, B' as ends of diameter, then slope of a common tangent to C and the given Hyperbola is

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

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

Q5 AP EAPCET 2026 · 14 May · Shift 2 MCQ

From a point $P(x_1, -1)$ $(x_1 < 0)$, two tangents are drawn to the hyperbola $\frac{x^2}{2} - \frac{y^2}{3} = 1$. If the sum of the slopes of the tangents is 2, then $x_1 =$

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

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

Q6 AP EAPCET 2026 · 13 May · Shift 1 MCQ

The equation of the conjugate hyperbola of the hyperbola $x^2 - 4y^2 - 2x - 8y - 19 = 0$ is

(A) $x^2 - 4y^2 - 2x - 8y - 33 = 0$
(B) $x^2 - 4y^2 - 2x - 8y + 33 = 0$
(C) $x^2 - 4y^2 - 2x - 8y + 13 = 0$
(D) $x^2 - 4y^2 - 2x - 8y - 13 = 0$

Answer: (C) $x^2 - 4y^2 - 2x - 8y + 13 = 0$ · The council's preliminary key

Q7 AP EAPCET 2026 · 13 May · Shift 2 MCQ

If the tangent and normal at any point on the hyperbola $x^2 - y^2 = a^2$ cut off intercepts a_1 and a_2 on X-axis, b_1 and b_2 on Y-axis respectively, then

(A) $a_1a_2 = b_1b_2$
(B) $a_1b_2 = a_2b_1$
(C) $a_1b_2 + a_2b_1 = 0$
(D) $a_1a_2 + b_1b_2 = 0$

Answer: (D) $a_1a_2 + b_1b_2 = 0$ · The council's preliminary key

Q8 AP EAPCET 2026 · 12 May · Shift 1 MCQ

Let X-axis be the transverse axis and origin be the centre of a hyperbola. If its latus rectum subtends an angle of 150° at its vertex, then its eccentricity is

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

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

Q9 AP EAPCET 2026 · 12 May · Shift 2 MCQ

Let S , S' be the foci of a standard hyperbola $\frac{x^2}{a^2}-\frac{y^2}{b^2}=1$ and its eccentricity be $\sqrt{5}$. If 'b' is the radius of a circle concentric with the hyperbola, then the number of points of intersection of the circle and the hyperbola is

(A) 4
(B) 2
(C) 0
(D) 1

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

Q10 TS EAPCET 2026 · 11 May · Shift 1 MCQ

If the foci of the ellipse $\frac{x^2}{25}+\frac{y^2}{k^2}=1$ $(k^2<25)$ and the hyperbola $\frac{x^2}{k}-\frac{y^2}{5}=1$ are same then the product of the length of the latus rectum of the ellipse and that of hyperbola is

(A) 25
(B) 50
(C) 16
(D) 32

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

Q11 TS EAPCET 2026 · 11 May · Shift 2 MCQ

The foci of the ellipse $\frac{x^2}{25}+\frac{y^2}{16}=1$ and that of the hyperbola $\frac{x^2}{a^2}-\frac{y^2}{b^2}=1$ are same. The greatest length of the transverse axis of the hyperbola such that the difference of the squares of their eccentricities is at least one is

(A) $15\sqrt{\frac{2}{17}}$
(B) 6
(C) $\frac{30}{\sqrt{17}}$
(D) $\frac{15}{\sqrt{34}}$

Answer: (A) $15\sqrt{\frac{2}{17}}$ · The council's preliminary key

Q12 TS EAPCET 2026 · 10 May · Shift 1 MCQ

Let $\frac{3}{2}$ be the eccentricity of the conjugate hyperbola of a hyperbola H and one of the foci of H lie on the straight line $x+y-3=0$. If the transverse and conjugate axes of H are along X, Y-axes respectively then the length of the latus rectum of H is

(A) $\frac{4}{\sqrt{5}}$
(B) $\frac{8}{\sqrt{5}}$
(C) $\frac{10}{3}$
(D) $\frac{5}{3}$

Answer: (B) $\frac{8}{\sqrt{5}}$ · The council's preliminary key

Q13 TS EAPCET 2026 · 10 May · Shift 2 MCQ

If the straight line $x+y+k=0$ touches the hyperbola $x^2-5y^2=5$ and it makes intercepts on positive coordinate axes then its point of contact is

(A) $(5,2)$
(B) $(5,-2)$
(C) $\left(-\frac{5}{2},\frac{1}{2}\right)$
(D) $\left(\frac{5}{2},-\frac{1}{2}\right)$

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

Q14 TS EAPCET 2026 · 9 May · Shift 1 MCQ

For a hyperbola $\frac{x^2}{a^2}-\frac{y^2}{b^2}=1$, the distance between its vertex and focus which are lying on the positive side of X-axis is 2. If the length of its latus rectum is 13, then the eccentricity of the hyperbola is

(A) 2.25
(B) 2.50
(C) 1.75
(D) 2.00

Answer: (A) 2.25 · The council's preliminary key

Q15 TS EAPCET 2026 · 9 May · Shift 2 MCQ

If both the foci of a hyperbola, with eccentricity $\sqrt{3}$, lie on X-axis and X-coordinates of these foci are the roots of the equation $x^2-4x+1=0$ then the length of the chord of this hyperbola which passes through its focus and perpendicular to its major axis is

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

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

Q16 AP EAPCET 2025 · 27 May · Shift 1 MCQ

If the eccentricity of the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ passing through the point (4, 6) is 2, then the equation of the tangent to this hyperbola at (4, 6) is

(A) $2x - 3y + 10 = 0$
(B) $3x - 2y = 0$
(C) $x - 2y + 8 = 0$
(D) $2x - y - 2 = 0$

Answer: (D) $2x - y - 2 = 0$ · The council's preliminary key

Q17 AP EAPCET 2025 · 27 May · Shift 1 MCQ

A hyperbola passes through the point $P(\sqrt{2}, \sqrt{3})$ and has foci at $(\pm 2, 0)$. Then the point that lies on the tangent drawn to this hyperbola at P is

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

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

Q18 AP EAPCET 2025 · 26 May · Shift 1 MCQ

If θ is the angle subtended by a latus rectum at the centre of the hyperbola having eccentricity $\frac{2}{\sqrt{7} - \sqrt{3}}$, then $\sin\theta =$

(A) $\frac{1}{2}\tan\frac{\theta}{2}$
(B) $2\cos\frac{\theta}{2}$
(C) $\frac{1}{\sin\frac{\theta}{2} + \cos\frac{\theta}{2}}$
(D) $1 - \cos\frac{\theta}{2}$

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

Q19 AP EAPCET 2025 · 26 May · Shift 1 MCQ

The tangent drawn at an extremity (in the first quadrant) of latus rectum of the hyperbola $\frac{x^2}{4} - \frac{y^2}{5} = 1$ meets the x-axis and y-axis at A and B respectively. If O is the origin, then $(OA)^2 - (OB)^2 =$

(A) $-\frac{20}{9}$
(B) $\frac{16}{9}$
(C) $-\frac{4}{9}$
(D) $-\frac{4}{3}$

Answer: (A) $-\frac{20}{9}$ · The council's preliminary key

Q20 AP EAPCET 2025 · 26 May · Shift 2 MCQ

Let $P(a\sec\theta, b\tan\theta)$ and $Q(a\sec\phi, b\tan\phi)$ where $\theta + \phi = \frac{\pi}{2}$ be two points on the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$. If (h, k) is the point of intersection of the normals drawn at P and Q, then $k =$

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

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

Q21 AP EAPCET 2025 · 26 May · Shift 2 MCQ

If the angle between the asymptotes of a hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ is $2\,\mathrm{Tan}^{-1}\left(\frac{2}{3}\right)$ and $a^2 - b^2 = 45$, then $ab =$

(A) 20
(B) 24
(C) 45
(D) 54

Answer: (D) 54 · The council's preliminary key

Q22 AP EAPCET 2025 · 24 May · Shift 1 MCQ

If $3\sqrt{2}\,x - 4y = 12$ is a tangent to the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ and $\frac{5}{4}$ is its eccentricity, then $a^2 - b^2 =$

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

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

Q23 AP EAPCET 2025 · 24 May · Shift 1 MCQ

If the normal drawn to the hyperbola $xy = 16$ at $(8, 2)$ meets the hyperbola again at a point (α, β), then $|\beta| + \frac{1}{|\alpha|} =$

(A) 40
(B) 34
(C) 28
(D) 54

Answer: (B) 34 · The council's preliminary key

Q24 AP EAPCET 2025 · 23 May · Shift 1 MCQ

$x + y + 3 = 0,\ 2x - y + 1 = 0$ are the equations of the asymptotes of a hyperbola. If $(1, -2)$ is a point on this hyperbola, then the equation of its conjugate hyperbola is

(A) $2x^2 + xy - y^2 + 7x - 2y - 1 = 0$
(B) $2x^2 + xy - y^2 + 7x - 2y + 13 = 0$
(C) $2x^2 + xy + y^2 - 7x - 2y - 1 = 0$
(D) $2x^2 + xy + y^2 - 7x - 2y + 13 = 0$

Answer: (B) $2x^2 + xy - y^2 + 7x - 2y + 13 = 0$ · The council's preliminary key

Q25 AP EAPCET 2025 · 23 May · Shift 1 MCQ

If θ is the acute angle between the tangents drawn from the point $(1, 1)$ to the hyperbola $4x^2 - 5y^2 - 20 = 0$, then $\tan\theta =$

(A) $2\sqrt{21}$
(B) $\frac{4}{5}$
(C) $\frac{\sqrt{7}}{2}$
(D) $\frac{2}{\sqrt{7}}$

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

Q26 AP EAPCET 2025 · 23 May · Shift 2 MCQ

If $3x + 2\sqrt{2}y + k = 0$ is a normal to the hyperbola $4x^2 - 9y^2 - 36 = 0$ making positive intercepts on both the axes, then $k =$

(A) $13\sqrt{2}$
(B) $-5\sqrt{2}$
(C) $-2\sqrt{2}$
(D) $-13\sqrt{2}$

Answer: (D) $-13\sqrt{2}$ · The council's preliminary key

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Q27 AP EAPCET 2025 · 23 May · Shift 2 MCQ

If a hyperbola has asymptotes $3x - 4y - 1 = 0$ and $4x - 3y - 6 = 0$, then the transverse and conjugate axes of that hyperbola are

(A) $x + y - 5 = 0,\ x - y - 1 = 0$
(B) $4x - 3y = 0,\ 3x + 4y = 0$
(C) $3x - 4y = 0,\ 4x + 3y = 0$
(D) $x + 2y - 1 = 0,\ 2x - y + 1 = 0$

Answer: (A) $x + y - 5 = 0,\ x - y - 1 = 0$ · The council's preliminary key

Q28 AP EAPCET 2025 · 22 May · Shift 1 MCQ

The distance between the tangents of the hyperbola $2x^2 - 3y^2 = 6$ which are perpendicular to the line $x - 2y + 5 = 0$ is

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

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

Q29 AP EAPCET 2025 · 22 May · Shift 2 MCQ

If the equation of the tangent of the hyperbola $5x^2 - 9y^2 - 20x - 18y - 34 = 0$ which makes an angle 45° with the positive X-axis in positive direction is $x + by + c = 0$ then $b^2 + c^2 =$

(A) 2 or 13
(B) 5 or 26
(C) 2 or 26
(D) 26 or 28

Answer: (C) 2 or 26 · The council's preliminary key

Q30 AP EAPCET 2025 · 22 May · Shift 2 MCQ

If the distance between the foci of a hyperbola H is 26 and distance between its directrices is $\frac{50}{13}$ then the eccentricity of the conjugate hyperbola of the hyperbola H is

(A) $\frac{13}{12}$
(B) $\frac{25}{17}$
(C) $\frac{13}{7}$
(D) $\frac{25}{13}$

Answer: (A) $\frac{13}{12}$ · The council's preliminary key

Q31 AP EAPCET 2025 · 21 May · Shift 1 MCQ

One of the latus recta of the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ subtends an angle $2\text{Tan}^{-1}\left(\frac{3}{2}\right)$ at the centre of the hyperbola. If $b^2 = 36$ and e is the eccentricity of the given hyperbola, then $\sqrt{a^2 + e^2} =$

(A) 4
(B) $\sqrt{14}$
(C) 6
(D) $\sqrt{21}$

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

Q32 AP EAPCET 2025 · 21 May · Shift 1 MCQ

If the equation of the hyperbola having $(8, 3), (0, 3)$ as foci and $\frac{4}{3}$ as eccentricity is $\frac{(x-\alpha)^2}{p} - \frac{(y-\beta)^2}{q} = 1$ then $p + q =$

(A) β^2
(B) $\alpha + \beta$
(C) α^2
(D) $\alpha\beta$

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

Q33 AP EAPCET 2025 · 21 May · Shift 2 MCQ

The tangents drawn to the hyperbola $5x^2 - 9y^2 = 90$ through a variable point P make the angles α and β with its transverse axis. If α, β are the complementary angles, then the locus of P is

(A) $x^2 + y^2 = 8$
(B) $x^2 - y^2 = 8$
(C) $x^2 - y^2 = 28$
(D) $x^2 + y^2 = 28$

Answer: (C) $x^2 - y^2 = 28$ · The council's preliminary key

Q34 AP EAPCET 2025 · 21 May · Shift 2 MCQ

If θ is the acute angle between the asymptotes of a hyperbola $7x^2 - 9y^2 = 63$, then $\cos\theta =$

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

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

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Q35 TS EAPCET 2025 · 4 May · Shift 1 MCQ

If the latus rectum through one of the foci of a hyperbola $\frac{x^2}{9} - \frac{y^2}{b^2} = 1$ subtends a right angle at the farther vertex of the hyperbola, then $b^2 =$

(A) 4
(B) 16
(C) 25
(D) 27

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

Q36 TS EAPCET 2025 · 4 May · Shift 2 MCQ

The number of common tangents that can be drawn to the curves $\frac{x^2}{16} - \frac{y^2}{9} = 1$ and $x^2 + y^2 = 16$ is

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

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

Q37 TS EAPCET 2025 · 3 May · Shift 1 MCQ

If the tangent drawn at the point $P(3\sqrt{2}, 4)$ on the hyperbola $\frac{x^2}{9} - \frac{y^2}{16} = 1$ meets its directrix at $Q(\alpha, \beta)$ in fourth quadrant then $\beta =$

(A) $\frac{5\sqrt{2}-9}{4}$
(B) $-\frac{9}{5}$
(C) $\frac{12\sqrt{2}-20}{5}$
(D) $-\frac{5}{4}$

Answer: (C) $\frac{12\sqrt{2}-20}{5}$ · The council's preliminary key

Q38 TS EAPCET 2025 · 3 May · Shift 2 MCQ

Let P, Q, R, S be the points of intersection of the circle $x^2 + y^2 = 4$ and the hyperbola $xy = \sqrt{3}$. If $P = (\alpha, \beta)$ and $\alpha > \beta > 0$, then the equation of the tangent drawn at P to the hyperbola is

(A) $x + y = 2$
(B) $x + \sqrt{3}y = 2\sqrt{3}$
(C) $\sqrt{3}x + y = \sqrt{3}$
(D) $x - y = 0$

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

Q39 TS EAPCET 2025 · 2 May · Shift 1 MCQ

If the product of the perpendicular distances from any point on the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ to its asymptotes is $\frac{36}{13}$ and its eccentricity is $\frac{\sqrt{13}}{3}$, then $a - b =$

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

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

Q40 TS EAPCET 2025 · 2 May · Shift 2 MCQ

If l is the maximum value of $-3x^2 + 4x + 1$ and m is the minimum value of $3x^2 + 4x + 1$, then the equation of the hyperbola having foci at $(l, 0)$, $(7m, 0)$ and eccentricity as 2 is

(A) $36x^2 - 12y^2 = 49$
(B) $2x^2 - 5y^2 = 1$
(C) $49x^2 - 36y^2 = 12$
(D) $36x^2 - 12y^2 = 1$

Answer: (A) $36x^2 - 12y^2 = 49$ · The council's preliminary key

Q41 TS EAPCET 2025 · 2 May · Shift 2 MCQ

Let x be the eccentricity of a hyperbola whose transverse axis is twice its conjugate axis. Let y be the eccentricity of another hyperbola for which the distance between the foci is 3 times the distance between its directrices. Then $y^2 - x^2 =$

(A) $\frac{23}{16}$
(B) $\frac{7}{4}$
(C) $\frac{4}{7}$
(D) $\frac{16}{23}$

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

Q42 AP EAPCET 2024 · 23 May · Shift 1 MCQ

If $y = x + \sqrt{2}$ is a tangent to the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{2} = 1$, then equations of its directrices are

(A) $x = \pm\sqrt{3}$
(B) $x = \pm\sqrt{\frac{8}{3}}$
(C) $x = \pm\sqrt{\frac{2}{3}}$
(D) $x = \pm\sqrt{\frac{4}{3}}$

Answer: (B) $x = \pm\sqrt{\frac{8}{3}}$ · The council's preliminary key

Q43 AP EAPCET 2024 · 23 May · Shift 1 MCQ

The area of the quadrilateral formed with the foci of the hyperbola $\frac{x^2}{16} - \frac{y^2}{9} = 1$ and its conjugate hyperbola is (in square units)

(A) 24
(B) 16
(C) 25
(D) 50

Answer: (D) 50 · The council's preliminary key

Q44 AP EAPCET 2024 · 22 May · Shift 1 MCQ

If the eccentricity of the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ is $\sec\alpha$, then area of the triangle formed by the asymptotes of the hyperbola with any of its tangent is

(A) $a^2b^2\sec^2\alpha$
(B) $\frac{b^2}{|\tan\alpha|}$
(C) $a^2\tan^2\alpha$
(D) $(a^2+b^2)\tan^2\alpha$

Answer: (B) $\frac{b^2}{|\tan\alpha|}$ · The council's preliminary key

Q45 AP EAPCET 2024 · 22 May · Shift 1 MCQ

If e_1 and e_2 are respectively the eccentricities of the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ and its conjugate hyperbola, then the line $\frac{x}{2e_1} + \frac{y}{2e_2} = 1$ touches the circle having centre at the origin, then its radius is

(A) 2
(B) $e_1 + e_2$
(C) e_1e_2
(D) 4

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

Q46 AP EAPCET 2024 · 22 May · Shift 2 MCQ

The line $21x + 5y = k$ touches the hyperbola $7x^2 - 5y^2 = 232$ then $k =$

(A) 116
(B) 232
(C) 58
(D) 110

Answer: (A) 116 · The council's preliminary key

Q47 AP EAPCET 2024 · 22 May · Shift 2 MCQ

If the equation $\frac{x^2}{7-k}+\frac{y^2}{5-k}=1$ represents a hyperbola, then

(A) $5<k<7$
(B) $k<5$ or $k>7$
(C) $k>5$
(D) $k\neq 5,\ k\neq 7,\ -\infty<k<\infty$

Answer: (A) $5<k<7$ · The council's preliminary key

Q48 AP EAPCET 2024 · 21 May · Shift 1 MCQ

The equation of the pair of asymptotes of the hyperbola $4x^2-9y^2-24x-36y-36=0$ is

(A) $2x^2-xy-3y^2-14x-9y-12=0$
(B) $2x^2-xy-3y^2-2x+3y=0$
(C) $2x^2-5xy+3y^2-22x+27y+60=0$
(D) $4x^2-9y^2-24x-36y=0$

Answer: (D) $4x^2-9y^2-24x-36y=0$ · The council's preliminary key

Q49 AP EAPCET 2024 · 21 May · Shift 1 MCQ

The equation of one of the tangents drawn from the point $(0,1)$ to the hyperbola $45x^2-4y^2=5$ is

(A) $4y+5=0$
(B) $3x+4y-4=0$
(C) $5x-6y+6=0$
(D) $9x-2y+2=0$

Answer: (D) $9x-2y+2=0$ · The council's preliminary key

Q50 AP EAPCET 2024 · 21 May · Shift 2 MCQ

The descending order of magnitude of the eccentricities of the following hyperbolas is

A. A hyperbola whose distance between foci is three times the distance between its directrices

B. Hyperbola in which the transverse axis is twice the conjugate axis

C. Hyperbola with asymptotes $x+y+1=0,\ x-y+3=0$

(A) C, A, B
(B) B, C, A
(C) C, B, A
(D) A, C, B

Answer: (D) A, C, B · The council's preliminary key

Q51 AP EAPCET 2024 · 20 May · Shift 1 MCQ

If a circle of radius 4 cm passes through the foci of the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{4} = 1$ and concentric with the hyperbola, then the eccentricity of the conjugate hyperbola of that hyperbola is

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

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

Q52 AP EAPCET 2024 · 20 May · Shift 1 MCQ

If a tangent to the hyperbola $x^2 - \frac{y^2}{3} = 1$ is also a tangent to the parabola $y^2 = 8x$, then equation of such tangent with the positive slope is

(A) $y - x - \frac{1}{2} = 0$
(B) $y - 2x - 1 = 0$
(C) $2y - 4x - 1 = 0$
(D) $y - x - 1 = 0$

Answer: (B) $y - 2x - 1 = 0$ · The council's preliminary key

Q53 AP EAPCET 2024 · 20 May · Shift 2 MCQ

If a directrix of a hyperbola centred at the origin and passing through the point $(4, -2\sqrt{3})$ is $\sqrt{5}\,x = 4$ and e is its eccentricity, then $e^2 =$

(A) $\frac{\sqrt{7}}{2}$
(B) $\frac{7}{2}$
(C) $\frac{35}{4}$
(D) $2\sqrt{3}$

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

Q54 AP EAPCET 2024 · 20 May · Shift 2 MCQ

If l_1 and l_2 are the lengths of the perpendiculars drawn from a point on the hyperbola $5x^2 - 4y^2 - 20 = 0$ to its asymptotes, then $\frac{l_1^2 l_2^2}{100} =$

(A) $\frac{20}{9}$
(B) $\frac{16}{81}$
(C) $\frac{4}{81}$
(D) $\frac{2}{9}$

Answer: (C) $\frac{4}{81}$ · The council's preliminary key

Q55 AP EAPCET 2024 · 19 May · Shift 2 MCQ

The locus of the mid points of the chords of the hyperbola $x^2 - y^2 = a^2$ which touch the parabola $y^2 = 4ax$ is

(A) $x(y^2 - x^2) = ay^2$
(B) $x(x^2 + y^2) = y^2 + x$
(C) $ax^3 + y^3 = 3x$
(D) $x(x^2 - y^2) = a^2$

Answer: (A) $x(y^2 - x^2) = ay^2$ · The council's preliminary key

Q56 AP EAPCET 2024 · 18 May · Shift 1 MCQ

If the line $5x - 2y - 6 = 0$ is a tangent to the hyperbola $5x^2 - ky^2 = 12$, then the equation of the normal to this hyperbola at the point $(\sqrt{6}, p)$ $(p < 0)$ is

(A) $\sqrt{6}x + 2y = 0$
(B) $2\sqrt{6}x + 3y = 3$
(C) $\sqrt{6}x - 5y = 21$
(D) $3\sqrt{6}x - y = 21$

Answer: (C) $\sqrt{6}x - 5y = 21$ · The council's preliminary key

Q57 AP EAPCET 2024 · 18 May · Shift 1 MCQ

If the angle between the asymptotes of the hyperbola $x^2 - ky^2 = 3$ is $\frac{\pi}{3}$ and e is its eccentricity, then the pole of the line $x + y - 1 = 0$ with respect to this hyperbola is

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

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

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Q58 TS EAPCET 2024 · 11 May · Shift 1 MCQ

$P(\theta)$ is a point on the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{9} = 1$, S is its focus lying on the positive X-axis and $Q = (0, 1)$. If $SQ = \sqrt{26}$ and $SP = 6$, then $\theta =$

(A) $\frac{\pi}{6}$
(B) $\frac{\pi}{4}$
(C) $\frac{\pi}{3}$
(D) $\text{Cos}^{-1}\left(\frac{2}{3}\right)$

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

Q59 TS EAPCET 2024 · 10 May · Shift 1 MCQ

The slope of the tangent drawn from the point $(1, 1)$ to the hyperbola $2x^2 - y^2 = 4$ is

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

Answer: (C) $-1 \pm \sqrt{6}$ · The council's preliminary key

Q60 TS EAPCET 2024 · 10 May · Shift 2 MCQ

If the tangent drawn at a point P(t) on the hyperbola $x^2 - y^2 = c^2$ cuts X-axis at T and the normal drawn at the same point P cuts the Y-axis at N, then the equation of the locus of the midpoint of TN is

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

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

Q61 TS EAPCET 2024 · 9 May · Shift 1 MCQ

The point of intersection of two tangents drawn to the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{4} = 1$ lie on the circle $x^2 + y^2 = 5$. If these tangents are perpendicular to each other, then $a =$

(A) 25
(B) 5
(C) 9
(D) 3

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

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Q62 TS EAPCET 2024 · 9 May · Shift 2 MCQ

(p, q) is the point of intersection of a latus rectum and an asymptote of the hyperbola $9x^2 - 16y^2 = 144$. If $p > 0$ and $q > 0$ then $q =$

(A) $\frac{9}{4}$
(B) $\frac{7}{4}$
(C) $\frac{15}{4}$
(D) $\frac{13}{4}$

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

Q63 AP EAPCET 2023 · 19 May · Shift 1 MCQ

Let e be the eccentricity of the ellipse $\frac{x^2}{4} + \frac{y^2}{9} = 1$. If $\frac{1}{e}$ is the eccentricity of a hyperbola, then the eccentricity of its conjugate hyperbola is

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

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

Q64 AP EAPCET 2023 · 19 May · Shift 1 MCQ

Let $x + y + 1 = 0$ and $x - y + 4 = 0$ be the asymptotes of a hyperbola H. If $(1, 1)$ is a point on H, then the length of the latus rectum of H is

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

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

Q65 AP EAPCET 2023 · 18 May · Shift 1 MCQ

The equation of the pair of asymptotes of the hyperbola $x^2 - 2y^2 - 8x + 8y + 4 = 0$ is

(A) $x^2 - 2y^2 - 8x + 8y - 8 = 0$
(B) $2x^2 - 4y^2 - 16x + 16y - 7 = 0$
(C) $x^2 - 2y^2 - 8x + 8y + 8 = 0$
(D) $2x^2 - 4y^2 - 16x + 16y + 9 = 0$

Answer: (C) $x^2 - 2y^2 - 8x + 8y + 8 = 0$ · The council's preliminary key

Q66 AP EAPCET 2023 · 18 May · Shift 1 MCQ

Let the points $P_1\left(\frac{\pi}{4}\right), P_2\left(\frac{3\pi}{4}\right), P_3\left(\frac{5\pi}{4}\right)$ and $P_4\left(\frac{7\pi}{4}\right)$ given in parametric form, lie on the hyperbola $\frac{x^2}{9}-\frac{y^2}{16}=1$. Then these four points in that order form

(A) a rectangle
(B) a square
(C) a parallelogram
(D) a rhombus

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

Q67 AP EAPCET 2023 · 18 May · Shift 2 MCQ

Let X – axis be the transverse axis and Y – axis be the conjugate axis of a hyperbola H. Let $x^2+y^2=16$ be the director circle of H. If the perpendicular distance from the centre of H to its latus rectum is $\sqrt{34}$ then $a+b=$

(A) 8
(B) 9
(C) 5
(D) 7

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

Q68 AP EAPCET 2023 · 18 May · Shift 2 MCQ

The equation of the pair of asymptotes of the hyperbola $\frac{(x-3)^2}{3}-\frac{(y-2)^2}{2}=1$ is

(A) $2x^2-3y^2-12x+12y-6=0$
(B) $2x^2-3y^2-12x+12y+8=0$
(C) $2x^2-3y^2-12x+12y-8=0$
(D) $2x^2-3y^2-12x+12y+6=0$

Answer: (D) $2x^2-3y^2-12x+12y+6=0$ · The council's preliminary key

Q69 AP EAPCET 2023 · 17 May · Shift 1 MCQ

If $P\left(\frac{\pi}{4}\right)$ and $Q\left(\frac{3\pi}{4}\right)$ are two points on the hyperbola $4x^2-y^2-8x-2y-13=0$ in parametric form, then the distance between P and Q is

(A) $4\sqrt{6}$
(B) 10
(C) $8\sqrt{3}$
(D) 5

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

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Q70 AP EAPCET 2023 · 17 May · Shift 1 MCQ

If the point $(1, 1)$ and the origin lie in the same region with respect to the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{1} = 1$ $(a > 0)$, then the range of a is

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

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

Q71 AP EAPCET 2023 · 17 May · Shift 2 MCQ

Let X- axis be the transverse axis and Y - axis be the conjugate axis of a hyperbola H. Let the eccentricity of H be the reciprocal of the eccentricity of the ellipse $\frac{x^2}{4} + \frac{y^2}{2} = 1$. If $(5, 4)$ is a point on H, then the length of the transverse axis of H is

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

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

Q72 AP EAPCET 2023 · 16 May · Shift 1 MCQ

If θ is the angle between the asymptotes of the hyperbola $\frac{x^2}{a^2} - \frac{(y-2)^2}{4} = 1$ and $\cos\theta = \frac{5}{13}$, then $a^2 =$

(A) $\frac{16}{3}$ or 18
(B) $\frac{16}{9}$ or 9
(C) $\frac{16}{7}$ or 6
(D) $\frac{16}{5}$ or 11

Answer: (B) $\frac{16}{9}$ or 9 · The council's preliminary key

Q73 AP EAPCET 2023 · 16 May · Shift 1 MCQ

Let P (h, k) be the point of contact of the tangent to the hyperbola $5x^2 - 7y^2 - 35 = 0$ which is parallel to the line $\sqrt{2}x - y + \lambda = 0$. If P lies in the third quadrant then $3h^2 - 2k =$

(A) $\frac{88}{9}$
(B) 36
(C) 21
(D) $\frac{76}{3}$

Answer: (B) 36 · The council's preliminary key

Q74 AP EAPCET 2023 · 16 May · Shift 2 MCQ

Let the transverse axis of a hyperbola H be parallel to the X – axis and $x^2 + y^2 - 2x - 4y + 3 = 0$ be the equation of the auxiliary circle of H. If the asymptotes of H are at right angles, then the equation of the hyperbola is

(A) $3x^2 - 2y^2 - 6x + 8y - 11 = 0$
(B) $x^2 - y^2 + 2x + 4y - 5 = 0$
(C) $3x^2 - 2y^2 + 6x + 8y - 11 = 0$
(D) $x^2 - y^2 - 2x + 4y - 5 = 0$

Answer: (D) $x^2 - y^2 - 2x + 4y - 5 = 0$ · The council's preliminary key

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Q75 AP EAPCET 2023 · 16 May · Shift 2 MCQ

If the equation of the tangent drawn at (h, k) to the hyperbola $\frac{(x-1)^2}{1} - \frac{(y-2)^2}{2} = 1$ is $x = 2$, then $h + k =$

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

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

Q76 AP EAPCET 2023 · 15 May · Shift 1 MCQ

If θ is the acute angle between the tangents drawn from the point $(2, 3)$ to the hyperbola $5x^2 - 6y^2 - 30 = 0$, then $\tan\theta =$

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

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

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Q77 AP EAPCET 2023 · 15 May · Shift 1 MCQ

The difference between the focal distances of any point on the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ is 6. If $(\sqrt{13}, k)$ is an end point of a latus rectum of this hyperbola, then $k =$

(A) $\pm\frac{9}{2}$
(B) $\pm\frac{8}{3}$
(C) ± 9
(D) $\pm\frac{4}{3}$

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

Q78 AP EAPCET 2023 · 15 May · Shift 2 MCQ

If $\mathrm{A}(4,0)$ and $\mathrm{B}(-4,0)$ are two points, then the locus of a point P such that $\mathrm{PA} - \mathrm{PB} = 4$ is

(A) $3x^2 - y^2 = 12$
(B) $x^2 - 3y^2 = 12$
(C) $4(x^2 - 3y^2) = 1$
(D) $3x^2 - y^2 = 1$

Answer: (A) $3x^2 - y^2 = 12$ · The council's preliminary key

Q79 AP EAPCET 2023 · 15 May · Shift 2 MCQ

Let $(1,2)$ be the focus and $x + y + 1 = 0$ be the directrix of a hyperbola H. If $\sqrt{3}$ is the eccentricity of H, then its equation is

(A) $x^2 - 6xy + y^2 - 14x - 22y + 17 = 0$
(B) $x^2 - 6xy + y^2 + 10x + 14y - 7 = 0$
(C) $x^2 + 6xy + y^2 - 14x - 22y + 17 = 0$
(D) $x^2 + 6xy + y^2 + 10x + 14y - 7 = 0$

Answer: (D) $x^2 + 6xy + y^2 + 10x + 14y - 7 = 0$ · The council's preliminary key

Q80 AP EAPCET 2023 · 15 May · Shift 2 MCQ

If $S \equiv \frac{x^2}{k-7} + \frac{y^2}{11-k} - 1 = 0, k \in R - \{7, 11\}$, then which one of the following statements is incorrect?

(A) $S = 0$ represents a circle with radius $\sqrt{2}$, when $k = 9$
(B) $S = 0$ represents an ellipse with eccentricity $\sqrt{\frac{2}{3}}$, when $k = 10$
(C) $S = 0$ represents a hyperbola with eccentricity $\sqrt{\frac{6}{5}}$, when $k = 12$
(D) $S = 0$ represents a hyperbola with eccentricity $\sqrt{\frac{3}{2}}$, when $k = 13$

Answer: (D) $S = 0$ **represents a hyperbola with eccentricity** $\sqrt{\frac{3}{2}}$, **when** $k = 13$ · The council's preliminary key

Q81 TS EAMCET 2023 · 14 May · Shift 1 MCQ

If the angle between the asymptotes of a hyperbola is 30° then its eccentricity is

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

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

Q82 TS EAMCET 2023 · 14 May · Shift 2 MCQ

If the line $2x+\sqrt{6}y=2$ touches the hyperbola $x^2-2y^2=4$, then the coordinates of the point of contact are

(A) $\left(\frac{1}{2},\frac{1}{\sqrt{6}}\right)$
(B) $(4,-\sqrt{6})$
(C) $(4,\sqrt{6})$
(D) $(-2,\sqrt{6})$

Answer: (B) $(4,-\sqrt{6})$ · The council's preliminary key

Q83 TS EAMCET 2023 · 13 May · Shift 1 MCQ

If $y=mx+4\ (m>0)$ is a tangent to the hyperbola $\frac{x^2}{25}-\frac{y^2}{9}=1$, then the point of contact of this tangent is

(A) $\left(-\frac{25}{4},-\frac{9}{4}\right)$
(B) $\left(\frac{25}{4},\frac{9}{4}\right)$
(C) $(1,5)$
(D) $\left(-\frac{1}{2},\frac{7}{2}\right)$

Answer: (A) $\left(-\frac{25}{4},-\frac{9}{4}\right)$ · The council's preliminary key

Q84 TS EAMCET 2023 · 13 May · Shift 2 MCQ

If the equation $x+y+n=0$ represents a normal to the hyperbola $\frac{x^2}{6}-\frac{y^2}{2}=1$, then $n=$

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

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

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Q85 TS EAMCET 2023 · 12 May · Shift 1 MCQ

If the equation of a hyperbola is $9x^2 - 16y^2 + 72x - 32y - 16 = 0$, then the equation of its conjugate hyperbola is

(A) $9x^2 - 16y^2 + 72x - 32y + 272 = 0$
(B) $9x^2 - 16y^2 + 72x - 32y + 288 = 0$
(C) $9x^2 - 16y^2 + 72x - 32y - 38 = 0$
(D) $9x^2 - 16y^2 + 72x - 32y + 16 = 0$

Answer: (A) $9x^2 - 16y^2 + 72x - 32y + 272 = 0$ · The council's preliminary key

Q86 TS EAMCET 2023 · 12 May · Shift 2 MCQ

$P(a\sec\theta, b\tan\theta)$ and $Q(a\sec\phi, b\tan\phi)$ are two points on the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ where $\phi + \theta = \frac{\pi}{2}$. If (h, k) is the point of intersection of the normals drawn at P and Q, then k=

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

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

Q87 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

Let e_1 be the eccentricity of a hyperbola for which distance between its focii is 2 times the distance between its directrices and e_2 be the eccentricity of another hyperbola for which the length of its transverse axis is twice the length of its the conjugate axis. Then $e_1e_2 =$

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

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

Q88 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

Assertion(A) : The distance between the points $p\left(\frac{\pi}{4}\right)$ and $p\left(\frac{\pi}{3}\right)$ on the hyperbola $9x^2 + 16y^2 = 9$ is $\frac{1}{2\sqrt{2}}\sqrt{66 - 33\sqrt{2} - 9\sqrt{3}}$

Reason(R) : $x = a\cosh t,\ y = b\sinh t$ are the parametric equations of the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$

The correct option among the following is

(A) (A) is true, (R) is true and (R) is the correct explanation for (A)

(B) (A) is true, (R) is true but (R) is not the correct explanation for (A)

(C) (A) is true but (R) is false

(D) (A) is false but (R) is true

Options (3) or (4) were accepted. More than one answer was accepted. · The council's preliminary key

Q89 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

Let S be the focus of the hyperbola $x^2 - 2y^2 = 1$ lying on the positive X-axis. Let $P(-1, 1)$ be a given point. Then the area of the triangle formed by the line PS with the coordinate axes is (in sq. units)

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

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

(C) $\frac{3}{2(2+\sqrt{6})}$

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

Answer: (C) $\frac{3}{2(2+\sqrt{6})}$ · The council's preliminary key

Q90 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

If $P\left(\frac{\pi}{6}\right)$ is a point on the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$, S, S^1 are its foci and $SP + S'P = 2|SP - S'P|$, then $e =$

(A) $\sqrt{2}$

(B) 2

(C) $\sqrt{3}$

(D) 3

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

Q91 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

If the latus rectum of a hyperbola subtends an angle of 120° at its centre, then its eccentricity is

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

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

Q92 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

Let $P\left(\frac{\pi}{4}\right), Q\left(\frac{5\pi}{4}\right), R\left(\frac{3\pi}{4}\right), T\left(\frac{7\pi}{4}\right)$ be the points on the hyperbola $x^2-4y^2-4=0$ in the parametric form. Then the area of the quadrilateral $PQRT$ is (in square units)

(A) $4\sqrt{2}$
(B) $16\sqrt{2}$
(C) $32\sqrt{2}$
(D) $8\sqrt{2}$

Answer: (D) $8\sqrt{2}$ · The council's preliminary key

Q93 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

A hyperbola having its centre at the origin is passing through the point (5, 2) and has transverse axis of length 8 along the X-axis. Then the eccentricity of its conjugate hyperbola is

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

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

Q94 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

If e_1 is the eccentricity of the hyperbola $x=\sec\theta, y=\sqrt{2}\tan\theta$ and e_2 is the eccentricity of the hyperbola $x=\sqrt{2}\sec\theta, y=\tan\theta$, then $\frac{e_2^2}{e_1^2}=$

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

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

Q95 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

If $\frac{x^2}{k-\frac{5}{2}}+\frac{y^2}{\frac{7}{3}-k}=1$ (k is a real number) represents a hyperbola, then the set of all values of k is

(A) $\left(-\infty,\frac{7}{3}\right)\cup\left(\frac{5}{2},\infty\right)$

(B) $\left(\frac{7}{3},\frac{5}{2}\right)$

(C) $\left(-1,\frac{7}{3}\right)\cup\left(\frac{5}{2},1\right)$

(D) $\mathbb{R}-\left(\frac{7}{3},\frac{5}{2}\right)$

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

Q96 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

Let $A(\theta_1)$ and $B(\theta_2)$ be two points on the hyperbola $\frac{x^2}{a^2}-\frac{y^2}{b^2}=1$ and S be the focus of the hyperbola. If A, S, B are collinear and $a\cos\left(\frac{\theta_1+\theta_2}{2}\right)=k\cos\left(\frac{\theta_1-\theta_2}{2}\right)$ then $k=$

(A) a^2+b^2

(B) $\sqrt{a^2+b^2}$

(C) a^2-b^2

(D) $a+b$

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

Q97 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

Let S be the focus of the hyperbola $\frac{x^2}{16}-\frac{y^2}{9}=1$ lying on the positive X– axis and $P(5,y_1)$ be point on the hyperbola. Then $SP=$

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

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

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

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

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

Q98 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

If $P(\theta)=\left(x_1,\frac{3\sqrt{5}}{2}\right)$, $0<\theta<\frac{\pi}{2}$ is a point on the hyperbola $\frac{x^2}{25}-\frac{y^2}{9}=1$, where θ is the parameter in its parametric form, then $2x_1+9\sin^2\theta=$

(A) 8
(B) 10
(C) 20
(D) 34

Answer: (C) 20 · The council's preliminary key

Q99 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

If one of the roots of the equation $x^2 - 5x - 14 = 0$ is the length of the semi conjugate axis of the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ and the square of the other root is the semi-transverse axis then the focus of the hyperbola that lies on the positive x-axis is

(A) $(5, 0)$
(B) $(\sqrt{65}, 0)$
(C) $(7, 0)$
(D) $(\sqrt{74}, 0)$

Answer: (B) $(\sqrt{65}, 0)$ · The council's preliminary key

Q100 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

If the chord of contact of a point P w.r.t. the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ passes through a fixed point (α, β), then the locus of P is a straight line. The sum of the squares of the intercepts made by this line on the coordinate axes is

(A) $\frac{a^4}{\alpha^2} + \frac{b^4}{\beta^2}$
(B) $\frac{\alpha^4}{a^2} + \frac{\beta^4}{b^2}$
(C) $\frac{\alpha^2}{4a^2} + \frac{\beta^2}{4b^2}$
(D) $\frac{a^2}{4\alpha^2} + \frac{b^2}{4\beta^2}$

Answer: (A) $\frac{a^4}{\alpha^2} + \frac{b^4}{\beta^2}$ · The council's preliminary key

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Q101 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

From any point on the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$, tangents are drawn to the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 2$. The area of the figure formed by the chord of contact of that point and the asymptotes is

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

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

Q102 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

Statement 1 : The eccentricity of the hyperbola $9x^2 - 16y^2 - 72x + 96y - 144 = 0$ is $5/4$

Statement 2: The eccentricity of the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ is $\sqrt{1 + \frac{b^2}{a^2}}$

(A) Statement 1 is true, Statement 2 is true; Statement 2 is correct explanation for Statement 1.

(B) Both statements are true and statement 2 is not the correct explanation of statement 1.

(C) Statement 1 is false; Statement 2 is true.

(D) Statement 1 is true; Statement 2 is false.

Answer: (A) Statement 1 is true, Statement 2 is true; Statement 2 is correct explanation for Statement 1. · The council's preliminary key

Q103 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

For a hyberbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$, if the length of the transverse axis is 8 and the distance between the foci is $2\sqrt{41}$, then the length of its latus rectum is

(A) $\frac{25}{2}$

(B) $\frac{32}{5}$

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

(D) $\frac{16}{5}$

Answer: (A) $\frac{25}{2}$ · The council's preliminary key

Q104 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

If the product of the perpendicular distances from any point on the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ to its asymptotes is 6 and eccentricity of the hyperbola is $\sqrt{3}$, then the length of the conjugate axis of the hyperbola is

(A) 3

(B) 6

(C) 8

(D) 12

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

Q105 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

If (1, 2) is the focus, x + 2y = 0 is the directrix and $\sqrt{2}$ is the eccentricity of a hyperbola then the equation of the hyperbola is

(A) $x^2 - y^2 = a^2$
(B) $3x^2 - 8xy - 3y^2 - 10x - 20y + 25 = 0$
(C) $xy = c^2$
(D) $3x^2 - 8xy - 3y^2 + 10x - 20y - 25 = 0$

Answer: (B) $3x^2 - 8xy - 3y^2 - 10x - 20y + 25 = 0$ · The council's preliminary key

Q106 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

The locus of the point of intersection on the line $\sqrt{3}x - y - 4\sqrt{3}k = 0$ and $\sqrt{3}kx + ky - 4\sqrt{3} = 0$ for different real values of k is a hyperbola H. If e is the eccentricity of H then $4e^2 =$

(A) 48
(B) 39
(C) 13
(D) 16

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

Q107 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

Let $L(x_1, 4)$ be the end of the Latus rectum of the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ lying in the first quadrant and let $S(8, y_1)$ be the focus of the given hyperbola. Then the length of its transverse axis is

(A) $2(\sqrt{17} - 1)$
(B) $4(\sqrt{17} - 1)$
(C) $2(\sqrt{17} + 1)$
(D) $4(\sqrt{17} + 1)$

Answer: (B) $4(\sqrt{17} - 1)$ · The council's preliminary key

Q108 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

If the line $3x - my + 5 = 0$ is a tangent to the hyperbola $3x^2 - 4y^2 = 300$ then the square of the Y - intercept made by this tangent line is

(A) $25/3$
(B) $35/3$
(C) $45/7$
(D) $15/7$

Answer: (D) $15/7$ · The council's preliminary key

Q109 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

Let $x^2 + y^2 = 16$ be the equation of the auxiliary circle of a hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ and let $(4\sqrt{2}, 3)$ be a point on the hyperbola. Then the eccentricity of the hyperbola is

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

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

Q110 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

The distance between the tangent lines to the hyperbola $x^2 - 2y^2 = 18$ which are perpendicular to the line $y = x$ is

(A) 6
(B) $3\sqrt{2}$
(C) $2\sqrt{3}$
(D) 0

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

Q111 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

The locus of point of intersection of tangents at the ends of normal chord of the hyperbola $x^2 - y^2 = a^2$ is

(A) $y^4 - x^4 = 4a^2x^2y^2$
(B) $y^2 - x^2 = 4a^2x^2y^2$
(C) $a^2(y^2 - x^2) = 4x^2y^2$
(D) $y^2 + x^2 = 4a^2x^2y^2$

Answer: (C) $a^2(y^2 - x^2) = 4x^2y^2$ · The council's preliminary key

Q112 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

If e_1 and e_2 are the eccentricities of the hyperbola $16x^2 - 9y^2 = 1$ and its conjugate respectively. Then $3e_1 =$

(A) $5e_2$
(B) $4e_2$
(C) $2e_2$
(D) e_2

Answer: (B) $4e_2$ · The council's preliminary key

Q113 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

If $\sqrt{5}y - \sqrt{8} = 0$ is the equation of the directrix of a hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} + 1 = 0$ and $\frac{\sqrt{5}}{2}$ is its eccentricity then $a =$

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

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

Q114 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

The locus of the point of intersection of the tangents at the end-points of normal chords of the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ is

(A) $\frac{a^6}{x^2} + \frac{b^6}{y^2} = (a^2 + b^2)^2$
(B) $\frac{a^6}{x^2} - \frac{b^6}{y^2} = (a^2 + b^2)^2$
(C) $\frac{a^6}{x^2} - \frac{b^6}{y^2} = (a^2 - b^2)^2$
(D) $\frac{a^6}{x^2} + \frac{b^6}{y^2} = (a^2 - b^2)^2$

Answer: (B) $\frac{a^6}{x^2} - \frac{b^6}{y^2} = (a^2 + b^2)^2$ · The council's preliminary key

Q115 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

Let origin be the centre, $(\pm 3, 0)$ be the foci and $\frac{3}{2}$ be the eccentricity of a hyperbola. Then the line 2x - y - 1 = 0

(A) intersects the hyperbola at two points
(B) does not intersect the hyperbola
(C) touches the hyperbola
(D) passes through the vertex of the hyperbola

Answer: (B) does not intersect the hyperbola · The council's preliminary key

Q116 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

The locus of a variable point whose chord of contact w.r.t. the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ subtends a right angle at the origin is

(A) $\frac{x^2}{4a^2} - \frac{y^2}{4b^2} = 1$
(B) $\left(\frac{x^2}{a^2} - \frac{y^2}{b^2}\right) = \frac{x^2}{a^4} + \frac{y^2}{b^4}$
(C) $\frac{x}{a} - \frac{y}{b} = \frac{1}{a^2} + \frac{1}{b^2}$
(D) $\frac{x^2}{a^4} + \frac{y^2}{b^4} = \frac{1}{a^2} - \frac{1}{b^2}$

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

Q117 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

If the normal to the rectangular hyperbola $x^2 - y^2 = 1$ at the point $P\left(\frac{\pi}{4}\right)$ meets the curve again at $Q(\theta)$, then $\sec^2\theta + \tan\theta =$

(A) 43
(B) 57
(C) 3
(D) 1

Answer: (B) 57 · The council's preliminary key

Q118 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

If the vertices and foci of a hyperbola are respectively $(\pm 3, 0)$ and $(\pm 4, 0)$ then the parametric equations of that hyperbola are

(A) $x = 3\sec\theta, y = 7\tan\theta$
(B) $x = \sqrt{3}\sec\theta, y = \sqrt{7}\tan\theta$
(C) $x = \sqrt{3}\sec\theta, y = 7\tan\theta$
(D) $x = 3\sec\theta, y = \sqrt{7}\tan\theta$

Answer: (D) $x = 3\sec\theta, y = \sqrt{7}\tan\theta$ · The council's preliminary key

Q119 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

If the foci of a hyperbola coincide with the foci of the ellipse $\frac{x^2}{25} + \frac{y^2}{9} = 1$, then the equation of hyperbola, if its eccentricity is 2, is _____

(A) $\frac{x^2}{4} - \frac{y^2}{12} = 1$
(B) $\frac{x^2}{12} - \frac{y^2}{4} = 1$
(C) $\frac{x^2}{16} - \frac{y^2}{144} = 1$
(D) $\frac{x^2}{2} - \frac{y^2}{12} = 1$

Answer: (A) $\frac{x^2}{4} - \frac{y^2}{12} = 1$ · The council's preliminary key

Q120 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

If in a hyperbola, the distance between the foci is 10 and transverse axis has length 8, then the length of its latus rectum is _____

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(A) 9
(B) $\frac{9}{2}$
(C) $\frac{32}{3}$
(D) $\frac{64}{3}$

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

Q121 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

If the latus rectum subtends a right angle at center of the hyperbola, then its eccentricity is:

(A) $\frac{\sqrt{13}}{2}$
(B) $\frac{\sqrt{5}-1}{2}$
(C) $\frac{\sqrt{5}+1}{2}$
(D) $\frac{\sqrt{3}+1}{2}$

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

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Q122 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

The equation of hyperbola whose eccentricity is $\frac{5}{3}$ and distance between the foci is 10 units is:

(A) $16x^2 - 9y^2 = 16$
(B) $16x^2 - 9y^2 = 9$
(C) $16x^2 - 9y^2 = -144$
(D) $16x^2 - 9y^2 = 144$

Answer: (D) $16x^2 - 9y^2 = 144$ · The council's preliminary key

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Q123 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

If the transverse and conjugate axes of hyperbola are equal, then its eccentricity is _____

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

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

Q124 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

In a hyperbola, if the length of transverse axis is twice that of the conjugate axis, then the distance between its directrices is _____ units.

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(A) $\frac{8b}{\sqrt{5}}$
(B) $\frac{8a}{\sqrt{5}}$
(C) $\frac{2a}{\sqrt{5}}$
(D) $\frac{2b}{\sqrt{5}}$

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

Q125 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

If one focus of a hyperbola is $(3, 0)$, the equation of its directrix is $4x - 3y - 3 = 0$ and its eccentricity $e = \frac{5}{4}$, then the co-ordinates of its vertex is _____

(A) $\left(\frac{3}{5}, \frac{11}{5}\right)$
(B) $\left(\frac{11}{5}, \frac{3}{5}\right)$
(C) $\left(\frac{7}{5}, \frac{4}{5}\right)$
(D) $\left(\frac{4}{5}, \frac{7}{5}\right)$

Answer: (B) $\left(\frac{11}{5}, \frac{3}{5}\right)$ · The council's preliminary key

Q126 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

If the focal chord of the hyperbola subtends a right angle at the center, then its eccentricity is

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

Answer: (C) $e = \frac{\sqrt{5}+1}{2}$ · The council's preliminary key

Q127 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

The asymptotes of the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$, with any tangent to the hyperbola form a triangle whose area is $a^2 \tan(\alpha)$. Then its eccentricity equals _____

(A) $\sec(\alpha)$
(B) $\operatorname{cosec}(\alpha)$
(C) $\sec^2(\alpha)$
(D) $\operatorname{cosec}^2(\alpha)$

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

Q128 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

The focii of the hyperbola $5x^2 - 6y^2 - 10x - 24y - 34 = 0$ are

(A) $\left(-2 \pm \frac{\sqrt{33}}{2}, 2\right)$

(B) $\left(2 \pm \frac{\sqrt{33}}{\sqrt{2}}, -2\right)$

(C) $\left(2 \pm \frac{\sqrt{11}}{\sqrt{2}}, 2\right)$

(D) $\left(1 \pm \frac{\sqrt{11}}{\sqrt{2}}, -2\right)$

Answer: (D) $\left(1 \pm \frac{\sqrt{11}}{\sqrt{2}}, -2\right)$ · The council's preliminary key

Q129 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

If the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ $(a > b)$ has eccentricity and the length of the latus rectum respectively equal to $\frac{5}{4}$ and 9, then $ab =$

(A) $12\sqrt{2}$

(B) $18\sqrt{3}$

(C) 48

(D) 20

Answer: (C) 48 · The council's preliminary key

Q130 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

If $\frac{x^2}{\alpha + 3} + \frac{y^2}{2 - \alpha} = 1$ represents a hyperbola, then α lies in

(A) $(-3, 2)$

(B) $(-3, \infty)$

(C) $(-\infty, -2)$

(D) $(-\infty, -3) \cup (2, \infty)$

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

Q131 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

If the latus rectum of a hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ subtends an angle of 60° at the other focus, then the eccentricity of the hyperbola is

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

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

Q132 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

The lines $x\cos\alpha + y\sin\alpha = P,\ \alpha \in \mathbb{R}$ are chords of the hyperbola $\frac{x^2}{9} - \frac{y^2}{36} = 1$ and they subtend a right angle at the centre of the hyperbola. The locus of the poles of these lines with respect to the given hyperbola is

(A) $x^2 - 16y^2 = 108$
(B) $16x^2 - y^2 = 108$
(C) $16x^2 + y^2 = 108$
(D) $x^2 + 16y^2 = 108$

Answer: (C) $16x^2 + y^2 = 108$ · The council's preliminary key

Q133 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

If $(\alpha, -1)$ is an interior point of the curve $4x^2 - 3y^2 = 1$, then α lies in

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

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

Q134 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

Let LL' be the latus rectum through the focus S of a hyperbola and A' be the opposite vertex of the hyperbola. If triangle $A'LL'$ is equilateral, then the eccentricity of the hyperbola is

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

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

Q135 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

The equation of the asymptotes of the hyperbola $2x^2 + 5xy + 2y^2 - 11x - 7y - 4 = 0$ is

(A) $2x^2 + 5xy + 2y^2 - 11x - 7y - 9 = 0$
(B) $2x^2 + 5xy + 2y^2 - 11x - 7y + 5 = 0$
(C) $2x^2 + 5xy + 2y^2 - 11x - 7y + 4 = 0$
(D) $2x^2 + 5xy + 2y^2 - 11x - 7y + 9 = 0$

Answer: (B) $2x^2 + 5xy + 2y^2 - 11x - 7y + 5 = 0$ · The council's preliminary key

Q136 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

The vertices of the hyperbola $7x^2 - 49y^2 = 343$ having eccentricity '4/3' is

(A) $(0, 0)$
(B) $(\pm 3, 0)$
(C) $(0, \pm 5)$
(D) $(\pm 7, 0)$

Answer: (D) $(\pm 7, 0)$ · The council's preliminary key

Q137 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

The equation of the hyperbola with focus $(1, 2)$, $e = \sqrt{3}$ and directrix $2x + y = 1$ is given by

(A) $2y^2 - 12xy - 7x^2 + 2x - 14y + 22 = 0$
(B) $2y^2 + 12xy + 7x^2 - 2x + 14y - 22 = 0$
(C) $2y^2 - 12xy - 7x^2 - 2x - 14y - 22 = 0$
(D) $2y^2 + 12xy + 7x^2 + 2x + 14y + 22 = 0$

Answer: (A) $2y^2 - 12xy - 7x^2 + 2x - 14y + 22 = 0$ · The council's preliminary key

Q138 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

Tangent at any point θ on the curve $x = 35\sec\theta,\ y = 35\tan\theta$ is _____

(A) $y\sin\theta = x + 35\cos\theta$
(B) $y\sin\theta = x - 35\cos\theta$
(C) $y\cos\theta = x - 35\sin\theta$
(D) $y\cos\theta = x + 35\sin\theta$

Answer: (B) $y\sin\theta = x - 35\cos\theta$ · The council's preliminary key

Q139 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

Intersection of two perpendicular tangents to the hyperbola $\frac{x^2}{4} - \frac{y^2}{2} = 1$ lies on the circle $x^2 + y^2 =$ _____

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

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

Q140 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

The equation of the transverse axis of hyperbola $(x-3)^2+(y+1)^2=(4x+3y)^2$ is

(A) $3x+4y=13$
(B) $3x-4y=13$
(C) $4x-3y=13$
(D) $3x-4y=9$

Answer: (B) $3x-4y=13$ · The council's preliminary key

Q141 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

Tangents are drawn to the hyperbola $x^2-9y^2=9$ from point $(3,2)$. Then the area of the triangle formed by the tangents and the chord of contact is _____ sq. units

(A) 10
(B) 6
(C) 12
(D) 8

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

Q142 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

If the latus rectum of a hyperbola through one focus subtends an angle 60° at the other focus, then its eccentricity is _____

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

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

Q143 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

For the hyperbola $x^2-y^2-4x+2y+c=0$, if the focus is S $(2+2\sqrt{2},k)$ and the directrix that is adjacent to S is $x=2+\sqrt{2}$, then $c=$

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

Answer: (B) -1 · Official TGCHE final key

Q144 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

If p, q are the eccentricities of the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ and its conjugate hyperbola respectively, then the area of the square (in sq. units) formed by the points of intersection of the ellipse $\frac{x^2}{p^2} + \frac{y^2}{q^2} = 1$ and the pair of lines $x^2 - y^2 = 0$ is

(A) 4
(B) $\sqrt{2}$
(C) $\frac{\sqrt{3}}{2}$
(D) 16

Answer: (A) 4 · Official TGCHE final key

Q145 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

A rectangular hyperbola passing through $(3, 2)$ has its asymptotes parallel to the coordinate axes. If $(1, 1)$ is the point of intersection of the two perpendicular tangents of that hyperbola, then its equation is

(A) $xy = x + \frac{1}{y}$
(B) $x\left(y + 1 + \frac{1}{x}\right) = 1$
(C) $x(1 - y) = y - 1$
(D) $xy = x + y + 1$

Answer: (D) $xy = x + y + 1$ · Official TGCHE final key

Q146 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

If (8, 2) is a point on the hyperbola whose length of the transverse axis is 12 and conjugate axis is $x = 0$, then the eccentricity of that hyperbola is

(A) $\frac{2\sqrt{2}}{7}$
(B) $\frac{8}{5}$
(C) $\frac{2\sqrt{2}}{\sqrt{7}}$
(D) $\frac{\sqrt{8}}{5}$

Answer: (C) $\frac{2\sqrt{2}}{\sqrt{7}}$ · Official TGCHE final key

Q147 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

The equation of the hyperbola, whose eccentricity is $\sqrt{2}$ and whose foci are 16 units apart, is

(A) $9x^2 - 4y^2 = 36$
(B) $2x^2 - 3y^2 = 7$
(C) $x^2 - y^2 = 16$
(D) $x^2 - y^2 = 32$

Answer: (D) $x^2 - y^2 = 32$ · Official TGCHE final key

Q148 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

If the circle $x^2 + y^2 = a^2$ intersects the hyperbola $xy = b^2$ at four points $(x_1, y_1), (x_2, y_2), (x_3, y_3), (x_4, y_4)$, then $y_1y_2y_3y_4 =$

(A) a^4
(B) 0
(C) b^4
(D) b^2

Answer: (C) b^4 · Official TGCHE final key

Q149 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

The value of b^2 in order that the foci of the hyperbola $\frac{x^2}{144} - \frac{y^2}{81} = \frac{1}{25}$ and the ellipse $\frac{x^2}{16} + \frac{y^2}{b^2} = 1$ coincide is

(A) 1
(B) 5
(C) 7
(D) 9

Answer: (C) 7 · Official TGCHE final key

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Q150 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

If the pole of the line $3x - 16y + 48 = 0$ with respect to the hyperbola $9x^2 - 16y^2 = 144$ is (α, β), then $\alpha - \beta =$

(A) 0
(B) -3
(C) 2
(D) -7

Answer: (C) 2 · Official TGCHE final key

Q151 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

Let $P(a\sec\theta, b\tan\theta)$ and $Q(a\sec\phi, b\tan\phi)$ be two points such that $\theta + \phi = \frac{\pi}{2}$ on the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$. If (h, k) is the point of intersection of the normals at P and Q, then $k =$

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

Answer: (D) $-\left(\frac{a^2 + b^2}{b}\right)$ · Official TGCHE final key

Q152 TS EAMCET 2019 · 6 May · Shift 1 MCQ

If $L_1 = 0$ and $L_2 = 0$ are the asymptotes of the hyperbola $9x^2 - 4y^2 + 36x + 8y - 4 = 0$, then the product of the perpendicular distances from the point (1, 1) to the lines $L_1 = 0$ and $L_2 = 0$ is

(A) $\frac{32}{13}$
(B) $\frac{64}{13}$
(C) $\frac{81}{13}$
(D) $\frac{162}{13}$

Answer: (C) $\frac{81}{13}$ · Official TGCHE final key

Q153 TS EAMCET 2019 · 4 May · Shift 1 MCQ

The product of lengths of the perpendiculars from any point of the hyperbola $x^2 - y^2 = 8$ to its asymptotes is

(A) 2
(B) 3
(C) 4
(D) 8

Answer: (C) 4 · Official TGCHE final key

Q154 TS EAMCET 2019 · 4 May · Shift 2 MCQ

The line $2x + y = 1$ is a tangent to the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ $(a > b)$. If this line passes through the point of intersection of a directrix and the positive X-axis, then the eccentricity of that hyperbola is

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

Answer: (B) 2 · Official TGCHE final key

Q155 TS EAMCET 2019 · 3 May · Shift 1 MCQ

If e_1 is the eccentricity of the ellipse $\frac{x^2}{16} + \frac{y^2}{25} = 1$ and e_2 is the eccentricity of a hyperbola passing through the foci of the given ellipse and $e_1 e_2 = 1$, then the equation of such a hyperbola among the following is

(A) $\frac{x^2}{9} - \frac{y^2}{16} = 1$
(B) $\frac{y^2}{9} - \frac{x^2}{16} = 1$
(C) $\frac{x^2}{9} - \frac{y^2}{25} = 1$
(D) $\frac{x^2}{25} - \frac{y^2}{9} = 1$

Answer: (B) $\frac{y^2}{9} - \frac{x^2}{16} = 1$ · Official TGCHE final key

Q156 TS EAMCET 2019 · 3 May · Shift 2 MCQ

The distance between the tangents to the hyperbola $\frac{x^2}{20} - \frac{3y^2}{4} = 1$ which are parallel to the line $x + 3y = 7$ is

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

Answer: (B) $\frac{4}{\sqrt{5}}$ · Official TGCHE final key

Q157 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

If the normals drawn to the hyperbola $xy = 4$ at (α_i, β_i) $(i = 1, 2, 3, 4)$ are concurrent at the point (a, b), then $\frac{(\alpha_1 + \alpha_2 + \alpha_3 + \alpha_4)}{(\beta_1 + \beta_2 + \beta_3 + \beta_4)}(\alpha_1\alpha_2\alpha_3\alpha_4) =$

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

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

Q158 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

If $2x - ky + 3 = 0,\ 3x - y + 1 = 0$ are conjugate lines with respect to $5x^2 - 6y^2 = 15$, then $k =$

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

Answer: (A) 6 · Official APSCHE final key

Q159 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

The area (in sq. units) of the quadrilateral formed by the four common tangents drawn to the two hyperbolas $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ and $\frac{y^2}{a^2} - \frac{x^2}{b^2} = 1$ $(a > b)$ is

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

Answer: (B) $2(a^2 - b^2)$ · Official APSCHE final key

Q160 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

The locus of the midpoints of the chords of the circle $x^2 + y^2 = 16$ which are the tangents to the hyperbola $9x^2 - 16y^2 = 144$ is

(A) $3x^2 - 4y^2 = 16(x^2 + y^2)$
(B) $4x^2 - 3y^2 = 9(x^2 + y^2)$
(C) $16x^2 - 9y^2 = (x^2 + y^2)^2$
(D) $16x^2 - 9y^2 = 4(x^2 + y^2)$

Answer: (C) $16x^2 - 9y^2 = (x^2 + y^2)^2$ · Official APSCHE final key

Q161 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

A hyperbola with centre at $(0, 0)$ has its transverse axis along X-axis whose length is 12. If $(8, 2)$ is a point on the hyperbola, then its eccentricity is

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

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

Q162 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

The equation of a tangent to the hyperbola $16x^2 - 25y^2 - 96x + 100y - 356 = 0$ which makes an angle 45° with its transverse axis is

(A) $x - y + 2 = 0$
(B) $x - y + 4 = 0$
(C) $x + y + 2 = 0$
(D) $x + y + 4 = 0$

Answer: (A) $x - y + 2 = 0$ · Official APSCHE final key

Q163 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

If e_1, e_2 are respectively the eccentricities of the curves $9x^2 - 16y^2 - 144 = 0$ and $9x^2 - 16y^2 + 144 = 0$, then $\frac{e_1^2 e_2^2}{e_1^2 + e_2^2} =$

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

Answer: (B) 1 · Official APSCHE final key

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Q164 TS EAMCET 2018 · 7 May · Shift 1 MCQ

The locus of the mid points of the chords of the circle $x^2 + y^2 = 16$ which are tangents to the hyperbola $9x^2 - 16y^2 = 144$ is

(A) $12x^2 - 8y^2 = x^2 + y^2$
(B) $9x^2 + 12y^2 = (x^2 + y^2)^2$
(C) $16x^2 - 9y^2 = (x^2 + y^2)^2$
(D) $16x^2 - 6y^2 = x^4 + y^4$

Answer: (C) $16x^2 - 9y^2 = (x^2 + y^2)^2$ · The council's preliminary key

Q165 TS EAMCET 2018 · 5 May · Shift 1 MCQ

If $A = (1, 2),\ B = (2, 1)$ and P is a variable point satisfying the condition $|PA - PB| = 3$, then the locus of P is

(A) $8x^2 + 2xy + 8y^2 + 27x + 27y + 45 = 0$
(B) $4x^2 + xy + 4y^2 - 27x - 27y + 90 = 0$
(C) $32x^2 + 8xy + 32y^2 - 108x - 108y + 99 = 0$
(D) $8x^2 - 2xy + 8y^2 - 27x - 27y + 45 = 0$

Answer: (C) $32x^2 + 8xy + 32y^2 - 108x - 108y + 99 = 0$ · The council's preliminary key

Q166 TS EAMCET 2018 · 5 May · Shift 2 MCQ

The distance between the tangents drawn to the hyperbola $3x^2 - y^2 = 3$, that are parallel to the line $y = 2x + 4$ is

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

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

Q167 TS EAMCET 2018 · 4 May · Shift 2 MCQ

If the product of the slopes of the tangents drawn from an external point P to the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ is a constant k^2, then the locus of P is

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(A) $y^2 + b^2 = k^2(x^2 - a^2)$
(B) $y^2 - b^2 = k^2(x^2 - a^2)$
(C) $x^2 + b^2 = k^2(y^2 - a^2)$
(D) $x^2 - b^2 = k^2(y^2 - a^2)$

Answer: (A) $y^2 + b^2 = k^2(x^2 - a^2)$ · The council's preliminary key

Q168 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

If the equation of one asymptote of the hyperbola $14x^2 + 38xy + 20y^2 + x - 7y - 91 = 0$ is $7x + 5y - 3 = 0$, then the other asymptote is

(A) $2x - 4y + 1 = 0$
(B) $2x + 4y + 1 = 0$
(C) $2x - 4y - 1 = 0$
(D) $2x + 4y - 1 = 0$

Answer: (B) $2x + 4y + 1 = 0$ · The council's preliminary key

Q169 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

The locus of the point of intersection of the tangents drawn at the extremities of a normal chord of the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ is

(A) $\frac{a^2}{x^2} - \frac{b^2}{y^2} = a^2 + b^2$
(B) $\frac{a^4}{x^2} - \frac{b^4}{y^2} = (a^2 - b^2)^2$
(C) $\frac{a^3}{x^2} - \frac{b^3}{y^2} = (a^2 + b^2)^2$
(D) $\frac{a^6}{x^2} - \frac{b^6}{y^2} = (a^2 + b^2)^2$

Answer: (D) $\frac{a^6}{x^2} - \frac{b^6}{y^2} = (a^2 + b^2)^2$ · The council's preliminary key

Q170 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

If the eccentricity of a hyperbola is $\frac{5}{3}$, then the eccentricity of its conjugate hyperbola is

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

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

Q171 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

A tangent to the curve $9b^2x^2 - 4a^2y^2 = 36a^2b^2$ makes intercepts of unit length on each of the coordinate axes, then the point (a, b) lies on

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(A) $x^2 - y^2 = 1$
(B) $x^2 + y^2 = 1$
(C) $4x^2 - 9y^2 = 1$
(D) $4x^2 + 9y^2 = 1$

Answer: (C) $4x^2 - 9y^2 = 1$ · The council's preliminary key

Q172 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

The equation of the hyperbola whose asymptotes are the lines $3x + 4y - 2 = 0$, $2x + y + 1 = 0$ and which passes through the point $(1, 1)$ is

(A) $6x^2 + 11xy + 4y^2 - 30x + 2y + 7 = 0$
(B) $6x^2 + 11xy + 4y^2 - x + 2y - 22 = 0$
(C) $6x^2 + 11xy + 4y^2 - x + 2y + 22 = 0$
(D) $6x^2 + 11xy + 4y^2 - 3x - 7y - 11 = 0$

Answer: (B) $6x^2 + 11xy + 4y^2 - x + 2y - 22 = 0$ · The council's preliminary key

Q173 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

If the product of the lengths of the perpendiculars from any point on the hyperbola $16x^2 - 25y^2 = 400$ to its asymptotes is p and the angle between the two asymptotes is θ then $p \tan\frac{\theta}{2} =$

(A) $\frac{400}{41}$
(B) $\frac{320}{41}$
(C) $\frac{4}{5}$
(D) $\frac{25}{16}$

Answer: (B) $\frac{320}{41}$ · The council's preliminary key

Q174 TS EAMCET 2017 · 12 May · Offline MCQ

If the line $x + y + k = 0$ is a normal to the hyperbola $\frac{x^2}{9} - \frac{y^2}{4} = 1$ then $k =$

(A) $\pm\frac{\sqrt{5}}{13}$
(B) $\pm\frac{13}{\sqrt{5}}$
(C) $\pm\frac{13}{5}$
(D) $\pm\frac{5}{13}$

Answer: (B) $\pm\frac{13}{\sqrt{5}}$ · The council's preliminary key

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Q175 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

If $lx + my = 1$ is a normal to the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$, then $a^2m^2 - b^2l^2 =$

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

Answer: (A) $l^2m^2(a^2 + b^2)^2$ · The council's preliminary key

Q176 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

If c is a real number and $\frac{x^2}{c - 12} + \frac{y^2}{7 - c} = 1$ represents a hyperbola, then

(A) $7 < c < 12$
(B) $c < 7$
(C) $c > 12$
(D) $c < 7$ or $c > 12$

Answer: (D) $c < 7$ or $c > 12$ · The council's preliminary key

Q177 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

The locus of the mid points of the chords of the circle $x^2 + y^2 = 16$, which are tangents to the hyperbola $9x^2 - 16y^2 = 144$, is

(A) $8x^2 - 9y^2 = (x^2 + y^2)^2$
(B) $16x^2 - 9y^2 = (x^2 + y^2)^2$
(C) $9x^2 - 14y^2 = (x^2 + 2y^2)^2$
(D) $3x^2 + 4y^2 = (x^2 + 2y^2)^2$

Answer: (B) $16x^2 - 9y^2 = (x^2 + y^2)^2$ · The council's preliminary key

Q178 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

The product of the perpendicular distances drawn from any point on the hyperbola $\frac{x^2}{9} - \frac{y^2}{4} = 1$ to its asymptotes is

(A) $\frac{13}{36}$
(B) $\frac{13}{5}$
(C) $\frac{36}{13}$
(D) $\frac{36}{5}$

Answer: (C) $\frac{36}{13}$ · The council's preliminary key

Q179 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

The asymptotes of a hyperbola are parallel to $2x + 3y = 0$ and $3x + 2y = 0$. The equation of that hyperbola whose centre is at (1, 2) and passing through (5, 3) is

(A) $(2x + 3y - 8)(3x + 2y - 7) - 154 = 0$
(B) $(2x - 3y - 8)(3x - 2y - 7) - 154 = 0$
(C) $(3x + 2y - 8)(2x + 3y - 7) - 154 = 0$
(D) $(3x - 2y + 8)(2x + 3y - 7) - 154 = 0$

Answer: (A) $(2x + 3y - 8)(3x + 2y - 7) - 154 = 0$ · The council's preliminary key

Q180 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

Let C be the centre of the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ and P be a point on it. If the tangent at P to the hyperbola meets the straight lines $bx - ay = 0$ and $bx + ay = 0$ respectively in Q and R, then $CQ \cdot CR =$

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

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

Q181 TS EAMCET 2016 · 15 May · Offline MCQ

Let $A(2\sec\theta, 3\tan\theta)$ and $B(2\sec\phi, 3\tan\phi)$ where $\theta + \phi = \frac{\pi}{2}$, be two points on the hyperbola $\frac{x^2}{4} - \frac{y^2}{9} = 1$. If (α, β) is the point of intersection of normals to the hyperbola at A and B, then $\beta =$

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

Answer: (A) $\frac{-13}{3}$ · Official TGCHE final key

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Q182 AP EAMCET 2016 · 29 Apr · Offline MCQ

The values of m for which the line $y = mx + 2$ becomes a tangent to the hyperbola $4x^2 - 9y^2 = 36$ is

(A) $\pm\frac{2}{3}$
(B) $\pm\frac{2\sqrt{2}}{3}$
(C) $\pm\frac{8}{9}$
(D) $\pm\frac{4\sqrt{2}}{3}$

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

Q183 AP EAMCET 2014 · 22 May · Offline MCQ

A hyperbola passes through a focus of the ellipse $\frac{x^2}{169} + \frac{y^2}{25} = 1$. Its transverse and conjugate axes coincide respectively with the major and minor axes of the ellipse. The product of eccentricities is 1. Then the equation of the hyperbola is

(A) $\frac{x^2}{144} - \frac{y^2}{9} = 1$
(B) $\frac{x^2}{169} - \frac{y^2}{25} = 1$
(C) $\frac{x^2}{144} - \frac{y^2}{25} = 1$
(D) $\frac{x^2}{25} - \frac{y^2}{9} = 1$

Answer: (C) $\frac{x^2}{144} - \frac{y^2}{25} = 1$ · The council's preliminary key

Q184 AP EAMCET 2013 · 10 May · Offline MCQ

If $x = 9$ is a chord of contact of the hyperbola $x^2 - y^2 = 9$, then the equation of the tangent at one of the points of contact is

(A) $x + \sqrt{3}y + 2 = 0$
(B) $3x - 2\sqrt{2}y - 3 = 0$
(C) $3x - \sqrt{2}y + 6 = 0$
(D) $x - \sqrt{3}y + 2 = 0$

Answer: (B) $3x - 2\sqrt{2}y - 3 = 0$ · The council's preliminary key

Q185 AP EAMCET 2012 · 12 May · Offline MCQ

Equation of one of the tangents passing through (2, 8) to the hyperbola $5x^2 - y^2 = 5$ is

(A) $3x + y - 14 = 0$
(B) $3x - y + 2 = 0$
(C) $x + y + 3 = 0$
(D) $x - y + 6 = 0$

Answer: (B) $3x - y + 2 = 0$ · Official APSCHE final key

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Q186 AP EAMCET 2012 · 12 May · Offline MCQ

The area (in square units) of the equilateral triangle formed by the tangent at $(\sqrt{3}, 0)$ to the hyperbola $x^2 - 3y^2 = 3$ with the pair of asymptotes of the hyperbola is

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

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

Q187 AP EAMCET 2011 · 8 May · Offline MCQ

The angle between the asymptotes of the hyperbola $x^2 - 3y^2 = 3$ is

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

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

Q188 AP EAMCET 2010 · 30 May · Offline MCQ

The equation of the hyperbola which passes through the point $(2, 3)$ and has the asymptotes $4x + 3y - 7 = 0$ and $x - 2y - 1 = 0$ is :

(A) $4x^2 + 5xy - 6y^2 - 11x + 11y + 50 = 0$
(B) $4x^2 + 5xy - 6y^2 - 11x + 11y - 43 = 0$
(C) $4x^2 - 5xy - 6y^2 - 11x + 11y + 57 = 0$
(D) $x^2 - 5xy - y^2 - 11x + 11y - 43 = 0$

Answer: (C) $4x^2 - 5xy - 6y^2 - 11x + 11y + 57 = 0$ · Official APSCHE final key

Q189 AP EAMCET 2010 · 30 May · Offline MCQ

The product of the perpendicular distances from any point on the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ to its asymptotes is :

(A) $\frac{a^2b^2}{a^2-b^2}$

(B) $\frac{a^2b^2}{a^2+b^2}$

(C) $\frac{a^2+b^2}{a^2b^2}$

(D) $\frac{a^2-b^2}{a^2b^2}$

Answer: (B) $\frac{a^2b^2}{a^2+b^2}$ · Official APSCHE final key

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Q190 AP EAMCET 2010 · 30 May · Offline MCQ

The length of the latus rectum of the conic $\frac{5}{r} = 2 + 3\cos\theta + 4\sin\theta$ is :

(A) 2

(B) 3

(C) 4

(D) 5

Answer: (D) 5 · Official APSCHE final key

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