MATHS

BOOKS - HIMALAYA MATHS (KANNADA ENGLISH)

HYPERBOLA

Question Bank

1. The eccentricity of the hyperbola $4x^2 - 9y^2 = 36$ is

A. $\frac{13}{9}$

B. $\frac{13}{3}$

C. $\frac{\sqrt{13}}{9}$

D. $\frac{\sqrt{13}}{3}$

Answer: D

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2. The eccentricity of the hyperbola $3x^2 - 4y^2 = -12$ is

A. $\frac{\sqrt{17}}{3}$

B. $\frac{\sqrt{7}}{2}$

C. $\frac{4}{3}$

D. $\frac{3}{\sqrt{7}}$

Answer: B

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3. The foci of the hyperbola $9y^2 - 4x^2 = 36$ are the points

A. (±3,0)

B. (0,±3)

C. $\left(\pm \sqrt{13}, 0 \right)$

D. $\left(0, \pm \sqrt{13} \right)$

Answer: D

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4. Eecentricity of the hyperbola $9x^2 - 16y^2 = 144$ is

A. $\frac{5}{4}$

B. $\frac{4}{5}$

C. $\frac{3}{5}$

D. $\frac{4}{3}$

Answer: A

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5. The length of the conjugate axis of the hyperbola $49x^2 - 4y^2 = 196$ is

A. 4

B. 7

C. 14

D. 2

Answer: C

6. The length of the latus rectum of the hyperbola $49x^2 - 16y^2 = 784$ is

A. $\frac{49}{16}$

B. $\frac{784}{49}$

C. $\frac{49}{4}$

D. $\frac{49}{2}$

Answer: D

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7. The foci are (6,4) and (-4,4) and $e = 2$. Then the square of the semi conjugate axis is

A. $\frac{75}{4}$

B. $\frac{25}{4}$

C. $\frac{100}{9}$

D. none of these

Answer: A

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8. The distance between the foci is $4\sqrt{13}$ and the length of the conjugate axis is 8 , then the eccentricity of the hyperbola is

A. $\frac{\sqrt{13}}{3}$

B. $\frac{\sqrt{13}}{5}$

C. $\frac{\sqrt{13}}{7}$

D. none

Answer: A

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9. If the latus rectum subtends a right angle at the centre of a 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

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10. The latus rectum through one focus subtends a right angle at the farther vertex of the hyperbola then its eccentricity is

A. 4

B. $\sqrt{3}$

C. 2

D. $\sqrt{2}$

Answer: C

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11. The latus rectum of a hyperbola through one focus subtends 60° at the other focus then its eccentricity is

A. $\sqrt{2}$

B. $\sqrt{3}$

C. $\sqrt{5}$

D. $\sqrt{6}$

Answer: B

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12. The eccentricity of the hyperbola

$9x^2 - 16y^2 - 18x - 32y - 151 = 0$ is

A. $\frac{5}{4}$

B. $\frac{7}{4}$

C. $\frac{\sqrt{5}}{4}$

D. $\frac{\sqrt{7}}{4}$

Answer: A

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13. The centre of the hyperbola

$9x^2 - 16y^2 + 72x - 32y = 16$ is

A. (4,1)

B. (-4,1)

C. (4,-1)

D. (-4,-1)

Answer: D

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14. The centre of the hyperbola

$9x^2 - 16y^2 - 18x - 32y = 151$ is

A. (1,-1)

B. (-1,1)

C. (1,1)

D. (-1,-1)

Answer: A

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15. The length of the transverse axis of the hyperbola

$4x^2 - 9y^2 + 8x + 40 = 0$

A. 6

B. $2\sqrt{3}$

C. $4\sqrt{2}$

D. 4

Answer: D

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16. The eccentricity of the hyperbola $4x^2 - 9y^2 - 8x = 32$ is

A. $\frac{3}{2}$

B. $\frac{\sqrt{5}}{3}$

C. $\frac{\sqrt{13}}{2}$

D. $\frac{\sqrt{13}}{3}$

Answer: D

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17. The distance between the foci is 16 and the eccentricity is $\sqrt{2}$. The equation of the hyperbola in standard form is

A. $x^2 - y^2 = 4$

B. $x^2 - y^2 = 8$

C. $x^2 - y^2 = 16$

D. $x^2 - y^2 = 32$

Answer: D

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18. A hyperbola with eccentricity $e = 2$ has a focus at (0,0) and corresponding directrix $y - 1 = 0$. The equation of the hyperbola is

A. $x^2 - 3y^2 + 8y - 4 = 0$

B. $x^2 + 3y^2 + 8y - 4 = 0$

C. $3x^2 - y^2 + 8y - 4 = 0$

D. none of these

Answer: A

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19. The equation of the hyperbola with centre $(0, 0)$, distance between the foci is 18 and the distance between the directrices is 8 is

A. $\frac{x^2}{16} - \frac{y^2}{45} = 1$

B. $\frac{x^2}{36} - \frac{y^2}{25} = 1$

C. $\frac{x^2}{36} - \frac{y^2}{45} = 1$

D. $\frac{x^2}{25} - \frac{y^2}{36} = 1$

Answer: C

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20. Tangent to hyperbola $4x^2 - 5y^2 = 16$ at (3,-2) is

A. $6x - 5y = 28$

B. $6x + 5y = 8$

C. $5x - 6x + 28 - 0$

D. none of these

Answer: B

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21. The line $5x + 12y = 9$ touch the hyperbola $x^2 - 9y^2 = 9$ at

A. $\left(\frac{5}{3}, -4\right)$

B. $\left(5, \frac{4}{3}\right)$

C. $\left(-5, \frac{4}{3}\right)$

D. $\left(5, \frac{-4}{3}\right)$

Answer: D

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22. The conjugate axis of a hyperbola is 8 and passes through $(3, -2)$. The equation in standard form is

A. $\frac{5x^2}{16} - \frac{y^2}{36} = 1$

B. $\frac{x^2}{36} - \frac{5y^2}{16} = 1$

C. $\frac{5x^2}{36} - \frac{y^2}{16} = 1$

D. $\frac{x^2}{16} - \frac{y^2}{36} = 1$

Answer: C

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23. The tangents to hyperbola $3x^2 - y^2 = 3$ which are perpendicular to the line $x + 3y = 2$ are

A. $x - 3y = \pm\sqrt{6}$

B. $3x - y = \pm\sqrt{6}$

C. $3x + y = \pm\sqrt{6}$

D. $y - 3x = \pm\sqrt{6}$

Answer: B

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24. The equation to the normal to the hyperbola $\frac{x^2}{16} - \frac{y^2}{9} = 1 \text{at} \quad (-4, 0)$ is

A. $x = 0$

B. $2x - 3y = 1$

C. $y = 0$

D. $x = 1$

Answer: C

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25. The equation of the normal at $\theta = \frac{\pi}{6}$ to the hyperbola $3x^2 - 4y^2 = 12$ is

A. $3x - y\sqrt{3} = 7$

B. $3x + y\sqrt{3} = 7$

C. $x\sqrt{3} + 3y = 7$

D. $x\sqrt{3} - 3y = 7$

Answer: C

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26. The normal to hyperbola $4y^2 - 5x^2 = 20$ at the point (-4,5) is given by

A. $y + x = 1$

B. $y - x = 9$

C. $5y - 4x = 41$

D. none of these

Answer: B

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27. The asymptotes of the hyperbola are $y \pm x\sqrt{3} = 0$ and it passes through (4,6) then its equation is

A. $x^2 - 3y^2 = 12$

B. $3x^2 - y^2 = 8$

C. $x^3 - 3y^2 = 6$

D. $3x^2 - y^2 = 12$

Answer: D

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28. The equation of a hyperbola whose asymtotes are $3x \pm 5y=0$ and vertices are $(\pm 5, 0)$ is

A. $3x^2 - 5y^2 = 25$

B. $5x^2 - 3y^2 = 25$

C. $9x^2 - 25y^2 = 225$

D. $25x^2 - 9y^2 = 225$

Answer: C

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

A. $\frac{\pi}{3}$

B. $\frac{\pi}{5}$

C. $\frac{2\pi}{3}$

D. $\frac{2\pi}{5}$

Answer: C

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30. If θ is the angle between the asymptotes of the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ with eccentricity is e then $\sec\left(\frac{\theta}{2}\right) =$

A. e^2

B. e

C. $2e$

D. e^3

Answer: B

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31. The asymptote of the hyperbola $9x^2 - 25y^2 = 225$ are

A. $3x \pm 5y = 0$

B. $5x \pm 3y = 0$

C. $x \pm 3y = 0$

D. $5x \pm y = 0$

Answer: A

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32. The eccentricity of a hyperbola is $\frac{5}{3}$ then the eccentricity of its conjugate is

A. $\frac{5}{3}$

B. $\frac{5}{4}$

C. 5

D. cannot be determined

Answer: B

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33. The product of the perpendiculars drawn from the hyperbola $\frac{x^2}{4} - \frac{y^2}{8} = 1$ to its asymptotes is

A. $\frac{3}{8}$

B. $\frac{8}{3}$

C. $\frac{\sqrt{2}}{3}$

D. $\frac{3}{\sqrt{2}}$

Answer: B

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34. If e is the eccentricity of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1, (a < b)$ then

A. $3 \div 4$

B. $\sqrt{3}:2$

C. 0.084027777777778

D. $\sqrt{3}:1$

Answer: B

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35. The distance of the P on the parabola $y^2 = 4x$ from the focus is 26. Then $P =$

A. 12

B. 24

C. 6

D. 36

Answer: A

36. The eccentricity of the rectangular hyperbola is

A. 2

B. $\sqrt{2}$

C. 0

D. 1

Answer: C

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37. The eccentricity of the hyperbola which passes through (3,0) and $\left(3\sqrt{2}, 2\right)$ is

A. $\sqrt{13}$

B. $\frac{\sqrt{13}}{3}$

C. $\sqrt{\frac{13}{4}}$

D. $\sqrt{\frac{13}{5}}$

Answer: B

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38. The locus of the point of intersection of lines $\frac{x}{a}+\frac{y}{b}=\lambda$ and $\frac{x}{a}-\frac{y}{b}=\frac{1}{\lambda}$, where λ is a parameter, is

A. a circle

B. a parabola

C. an ellipse

D. a hyperbola

Answer: D

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39. Distance between the foci of the hyperbola $x^2 - y^2 = 7,$ is

A. $2\sqrt{\frac{2}{7}}$

B. $2\sqrt{\frac{7}{2}}$

C. $2\sqrt{14}$

D. $\sqrt{14}$

Answer: C

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40. If the eceentricity of a hyperbola is $\sqrt{7}$ then the eccentricity of its conjugate hyperbola is

A. $\sqrt{\frac{6}{5}}$

B. $\sqrt{\frac{7}{4}}$

C. $\sqrt{\frac{7}{5}}$

D. $\sqrt{\frac{7}{6}}$

Answer: D

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41. The locus of the middle points of chords of the hyperbola $3x^2 - 2y^2 + 4x - 6y = 0$ parallel to y = 2x is :

A. $3x - 4y = 4$

B. $3y - 4x + 4 = 0$

C. $4x - 4y = 3$

D. $4x - 4y = 2$

Answer: A

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42. If e and e' be the eccentricities of a hyperbolas $xy = c^2$ and $x^2 - y^2 = c^2$, then $e^2 + e'2$ equals :

A. 1

B. 3

C. 4

D. 2

Answer: C

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43. The length of the transverse axid , along x - axis with centre at origin of a hyperbola is 7 and

it passes through the point (5,-2) . The equations of the hyperbola is :

A. $\frac{(x+2)^2}{9} - \frac{(y-3)^2}{27} = 1$

B. $\frac{(x+1)^2}{16} - \frac{(y-3)^2}{48} = 1$

C. $\frac{(x+2)^2}{16} - \frac{(y-3)^3}{48} = 1$

D. $\frac{(x+2)^2}{9} - \frac{(y+3)^2}{27} = 1$

Answer: C

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44. The equations

$$x = \frac{1}{2}\left(t + \frac{1}{t}\right), y = \frac{1}{2}\left(t - \frac{1}{t}\right), t \neq 0,$$

represent

A. a circle

B. a parabola

C. an ellipse

D. a hyperbola

Answer: D

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45. The equation to the normal to the hyperbola $\frac{x^2}{16} - \frac{y^2}{9} = 1 \text{at} \quad (-4, 0)$ is

A. $\sqrt{}$sqrt(3) x+2 y=25$(3)x + 2y = 25$

B. $x + y = 25$

C. $y + 2x = 25$

D. $2x + \sqrt{3}y = 25$

Answer: D

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46. If P is any point on the hyperbola $x^2 - y^2 = a^2$ then $SP.S'P =$, where S, S' and C are respectively foci and the centre of the hyperbola

A. $(CP)^2$

B. $(CS)^2$

C. $(SS')^2$

D. $(CS')^2$

Answer: A

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

A. $9x^2 + 24xy - 4y^2 - 12x + 16y + 2 = 0$

B. $9x^2 + 24xy - 4y - 12x + 16y - 2 = 0$

C. $9x^2 + 24xy - 4y - 12x + 16y + 4 = 0$

D. $9x^2 + 24xy - 4y - 12x + 16y - 4 = 0$

Answer: D

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48. The equation of a tangent to the hyperbola $16x^2 - 25y^2 - 96x + 100y - 356 = 0,$ which makes an angle of $\frac{\pi}{4}$ with the transverse axis is :

A. $y = x + (2 + \sqrt{7})$

B. $y = x + (2 - \sqrt{7})$

C. $y = x + \sqrt{7}$

D. $y = x - (2 + \sqrt{7})$

Answer: D

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49. Equation of a tangent to the hyperbola $\frac{x^2}{25} - \frac{y^2}{16} = 1$ which makes an angle of $\frac{\pi}{4}$ with the transverse axis is

A. $y = x - 2$

B. $y = x + 3$

C. $y = x + 2$

D. $y = x - 4$

Answer: B

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50. Product of lengths of perpendiculars drawn from the foci on any tangent to the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ is :

A. 16

B. 25

C. 4

D. 5

Answer: B

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51. The product of the slopes of two tangents drawn to the hyperbola $\frac{x^2}{4} - \frac{y^2}{9} = 1$ is 4 , Then the locus of the point of intersection of the tangent is

A. $4x^2 - y^2 = 25$

B. $4x^2 + y^2 = 13$

C. $4x^2 + y^2 = 5$

D. $4x^2 - y^2 - 9$

Answer: A

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52. Combined equations of asymptotes of the hyperbola $2x^2 - 3y^2 + 4x - 6y = 0,$ is

A. $2x^2 - 3y^2 + 4x - 6y - 1 = 0$

B. $2x^2 - 3y^2 + 4x - 6y + 1 = 0$

C. $2x^2 - 3y^2 + 4x - 6y + 2 - 0$

D. $2x^2 - 3y^2 + 4x - 6y - 2 = 0$

Answer: A

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53. The angle between the asymptote of the hyperbola $2x^2 - 2y^2 - 8x + 16y - 5 = 0$ is

A. $\frac{\tan^{-1}(3)}{4}$

B. pi

C. (pi)/4

D. $\frac{\pi}{2}$

Answer: D

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54. The angle between the asymptotes of the hyperbola, $3x^2 - 2y^2 + 4x - 6y = 0$ is

A. $\frac{\tan^{-1}\left(\sqrt{3}\right)}{2}$

B. $\tan^{-1}\sqrt{6}$

C. $\tan^{-1} 2\sqrt{6}$

D. $\frac{\tan^{-1}\left(\sqrt{2}\right)}{3}$

Answer: C

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55. Number of points from where perpendicular tangents can be drawn to hyperbola, $25x^2 - 16y^2 = 400$

A. 0

B. 1

C. 2

D. infinitely many

Answer: D

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56. If $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$ represents a parallel lines, then

A. a circle

B. a pair of lines

C. an ellipse

D. a hyperbola

Answer: D

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57. Equation of the chord of the hyperbola $25x^2 - 16y^2 = 400,$ which is bisected at the point (6,2) is

A. $16x - 75y = 418$

B. $25x - 4y = 400$

C. $75x - 16y = 418$

D. $75x + 16y = 418$

Answer: C

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58. The equation of a tangent parallel to $y = x$ drawn to $\frac{x^2}{3} - \frac{y^2}{2} = 1$ is

A. $x + y \pm 1 = 0$

B. $x - y \pm 2 = 0$

C. $x + y \pm 2 = 0$

D. $x - y \pm 1 = 0$

Answer: D

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59. The equation $\frac{x^2}{12-k}+\frac{y^2}{8-k}=1$ represents

A. a hyperbola if $k<8$

B. an ellipse if $k>8$

C. a hyperbola if $8<k<12$

D. none of these

Answer: C

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60. The equation to the normal to the hyperbola $\frac{x^2}{16} - \frac{y^2}{9} = 1 \text{at} \quad (-4, 0)$ is

A. 6

B. 8

C. 64

D. 4

Answer: B

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61. The line $3x + 4y + 5 = 0$ is a tangent to the hyperbola $x^2 - 4y^2 = 5$ at

A. (3,1)

B. (-3,1)

C. (-3,-1)

D. (1,-3)

Answer: B

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62. The centre of the hyperbola

$2x^2 + 5xy + 3y^2 + 3x + 4y + 9 = 0$ is

A. (2,1)

B. (2,-1)

C. (-2,1)

D. (-2,-1)

Answer: C

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63. The asymptotes of a hyperbola are the coordinate axes. If the hyperbola passes through (4,2) then its equation is

A. $x^2 - y^2 = 8$

B. $x^2 - y^2 = 4$

C. $xy = 8$

D. $xy = 16$

Answer: C

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64. The distance between the directrices of the hyperbola $x^2 - y^2 = 4$ is

A. $\sqrt{2}$

B. $2\sqrt{2}$

C. $\sqrt{3}$

D. $3\sqrt{3}$

Answer: B

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65. If the circle $x^2 + y^2 = a^2$ intersects the hyperbola $xy = c^2$ in four points $P(x_1, y_1), Q(x_2, y_2), R(x_3, y_3)$ and $S(x_4, y_4)$ then

A. $x_1 + x_2 + x_3 + x_4 = 0$

B. $x_1 . x_2 . x_3 . x_4 = y_1 . y_2 . y_3 . y_4 = c^4$

C. $y_1 + y_2 + y_3 + y_4 = 0$

D. $x_1 + y_2 + x_3 + y_4 = 0$

Answer: D

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66. $2x + \sqrt{6}y = 2$ touches the hyperbola $x^2 - 2y^2 = 4$, then the point of contact is :

A. $(-2, \sqrt{6})$

B. $(-5, 2\sqrt{6})$

C. $\left(\frac{1}{2}, \frac{1}{\sqrt{6}}\right)$

D. $(4, -\sqrt{6})$

Answer: D

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67. If a hyperbola passes through a focus of the ellipse $\frac{x^2}{25}+\frac{y^2}{16}$=1 and its transverse and conjugate axes coincide with major and minor axes of the ellipse and the product of their eccentricities is 1, then the equation of hyperbola is

A. $\frac{x^2}{9}-\frac{y^2}{16}=1$

B. $\frac{x^2}{9}-\frac{y^2}{25}=1$

C. $\frac{x^2}{16}-\frac{y^2}{9}=1$

D. $\frac{x^2}{25}-\frac{y^2}{9}=1$

Answer: A

68. If (5,12) and (-9,12) are the foci of the hyperbola passing through the point $(0, 12)$, its eccentricity is

A. 7

B. $\frac{7}{2}$

C. 2

D. 5

Answer: B

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69. Let $P(a\sec\theta, b\tan\theta)$ and $Q(a\sec\varphi, b\tan\varphi)$ where $\theta+\varphi=\frac{\pi}{2}$ 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 at P and Q, then $k=$

A. $\frac{a^2+b^2}{a}$

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

C. $\frac{a^2+b^2}{a}$

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

Answer: D

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70. If the latus rectum subtends a right angle at the centre of a hyperbola then its eccentricity is

A. $\frac{\sqrt{3}+1}{2}$

B. $\frac{\sqrt{5}+1}{2}$

C. $\frac{\sqrt{5}+\sqrt{2}}{2}$

D. $\frac{\sqrt{3}+\sqrt{2}}{2}$

Answer: B

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71. The latus rectum through one focus subtends a right angle at the farther vertex of the hyperbola then its eccentricity is

A. $\sqrt{3}+1$

B. $\sqrt{2}+1$

C. $\sqrt{3}+\sqrt{2}$

D. 2

Answer: B

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72. S_1 and S_2 are the foci of an ellipse and B is the end of the minor axis. If the triangle S_1S_2B is an equilateral triangle, then eccentricity of the ellipse is

A. $\sqrt{2}$

B. $\sqrt{2}+1$

C. $\sqrt{3}$

D. $\sqrt{3}+1$

Answer: C

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73. If the pair of lines $b^2x^2 - a^2y^2 = 0$ are inclined at an angle θ then the eccentricity of the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ is

A. 1)$\sec\theta$

B. 2)$\cos\theta$

C. 3)$\frac{\cos(\theta)}{2}$

D. 4)$\sec\left(\frac{\theta}{2}\right)$

Answer: D

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74. The distance between foci of $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ is 9 and eccentricity is $\sqrt{3}$. The length of a latus rectum is:

A. 1)$6\sqrt{3}$

B. 2)$9\sqrt{2}$

C. 3)3

D. 4)6

Answer: B

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75. The length of the transverse axid , along x - axis with centre at origin of a hyperbola is 7 and

it passes through the point (5,-2) . The equations of the hyperbola is :

A. $\frac{4}{49}x^2 - \frac{196}{51}y^2 = 1$

B. $\frac{49}{4}x^2 - \frac{51}{196}y^2 = 1$

C. $\frac{4}{49}x^2 - \frac{51}{196}y^2 = 1$

D. none of these

Answer: C

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76. The eccentricity of the hyperbola whose latus rectum is 8 and conjugate axis is equal to half of the distance between the foci is :

A. $\frac{4}{3}$

B. $\frac{4}{\sqrt{3}}$

C.

D. $\frac{2}{\sqrt{3}}$

Answer: C

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77. The distance between the foci of a hyperbola is 16 and its eccentricity is $\sqrt{2}$. Its equation is :

A. (a) $x^2 - y^2 = 32$

B. $\frac{x^2}{4} - \frac{y^2}{9} = 1$

C. $2x - 3y^2 = 7$

D. none of these

Answer: A

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78. The equation of the hyperbola with eccentricity $\frac{3}{2}$ and foci at $(\pm 2, 0)$ is

A. $\frac{x^2}{4} - \frac{y^2}{5} = \frac{4}{9}$

B. $\frac{x^2}{9} - \frac{y^2}{9} = \frac{4}{9}$

C. $\frac{x^2}{4} - \frac{y^2}{9} = 1$

D. none of these

Answer: A

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79. The condition that $y = mx + c$ is a tangent to the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2}$=1 is

A. $c^2 = a^2m^2 + b^2$

B. $a^2 = c^2m^2 + b^2$

C. $b^2 - a^2m^2 + c^2$

D. $b^2 = a^2m^2 - c^2$

Answer: D

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80. The equation of the normal to the hyperbola $3x^2 - y^2 = 3$ at (2,-3) is

A. $x + 2y - 8 = 0$

B. $x - 2y - 8 = 0$

C. $2x - y - 8 = 0$

D. $2x - y + 8 = 0$

Answer: B

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81. What does this equation

$x^2 - 4y^2 - 2x + 16y - 40 = 0$ represent?

A. a pair of lines

B. a parabola

C. an ellipse

D. a hyperbola

Answer: D

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82. The centre of the hyperbola :

$9x^2 - 36x - 16y^2 + 96y - 252 = 0$ is

A. (2,3)

B. (-2,3)

C. (3,2)

D. (3,-2)

Answer: B

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83. The Asymptotes of the hyperbola $16x^2 - 9y^2 = 144$ are

A. $\frac{x^2}{9} + \frac{y^2}{16} = 1$

B. $\frac{y^2}{9} + \frac{x^2}{16} = 1$

C. $\frac{x^2}{9} + \frac{y^2}{16} = 0$

D. $\frac{x^2}{9} - \frac{y^2}{16} = 0$

Answer: D

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84. The eccentricity of the rectangular hyperbola is

A. e

B. ∞

C. $\sqrt{2}$

D. $\sqrt{3}$

Answer: C

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85. The equation of the tangent to the curve:

$x^2 - y^2 - 8x + 2y + 11 = 0$ at (2,1) is :

A. $x + 2 = 0$

B. $2x + 1 = 0$

C. $x - 2 = 0$

D. $x + y + 1 = 0$

Answer: C

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86. The value of ' m ' for which $y = mx + 6$ is a tangent to the hyperbola $\frac{x^2}{100} - \frac{y^2}{49} = 1$ is :

A. $\sqrt{\frac{17}{20}}$

B. $\sqrt{\frac{20}{17}}$

C. $\sqrt{\frac{3}{20}}$

D. $\sqrt{\frac{20}{3}}$

Answer: A

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87. The equation of the tangent to the hyperbola $4y^2 = x^2 - 1$ at the point (1,0) is

A. $y = 1$

B. $y = 4$

C. $x = 4$

D. $x = 1$

Answer: D

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88. If e and e' are eccentricities of a hyperbola its conjugate, then $\frac{1}{e^2} + \frac{1}{(e^1)^2} =$

A. 3

B. 4

C. 1

D. 2

Answer: C

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89. The value of K so that $y = 4x + K$ may touch the hyperbola $\frac{x^2}{64} - \frac{y^2}{49} = 1$ is

A. $\pm\sqrt{975}$

B. $\pm\sqrt{875}$

C. $\pm\sqrt{775}$

D. $\pm\sqrt{675}$

Answer: A

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90. The eccentricity of the hyperbola $36x^2 - 25y^2 = 900$ is

A. $\frac{\sqrt{61}}{5}$

B. 5

C. 6

D. $\frac{\sqrt{31}}{5}$

Answer: A

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91. If P is any point on the hyperbola $\frac{(x-1)^2}{9} - \frac{(y+1)^2}{16} = 1$ and S_1 and S_2 are its foci, then $|S_1P - S_2P| =$

A. 3

B. 4

C. 6

D. 8

Answer: C

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92. The point of intersection of two perpendicular tangents to $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ lies on the circle

A. $x^2 + y^2 = b^2$

B. $x^2 + y^2 = a^2$

C. $x^2 + y^2 = a^2 + b^2$

D. $x^2 + y^2 = a^2 - b^2$

Answer: D

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93. The line $p = x\cos\alpha + y\sin\alpha$ becomes tangent to $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ if

A. 1) $p^2 = a^2\cos\alpha - b^2\sin\alpha$

B. 2) $p = a\cos\alpha - b\sin\alpha$

C. 3) $p^2 = a^2\cos^2\alpha - b^2\sin^2\alpha$

D. 4) $p^2 = a^2\cos^2\alpha + b^2\sin^2\alpha$

Answer: C

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94. The eccentricity of the hyperbola

$\frac{\sqrt{1999}}{3}\left(x^2 - y^2\right) = 1$ is

A. $\sqrt{2}$

B. 2

C. $2\sqrt{2}$

D. $\sqrt{3}$

Answer: A

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95. The product of the perpendicular from any poitn P(x,y) on the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ to its asymptotes is

A. $\frac{ab}{\sqrt{a} + \sqrt{b}}$

B. $\frac{ab}{a^2 + b^2}$

C. $\frac{a^2b^2}{a^2 + b^2}$

D. $\frac{a^2 + b^2}{a^2b^2}$

Answer: C

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96. The length of transverse axis of the hyperbola $3x^2 - 4y^2 = 32$ is

A. $\frac{64}{3}$

B. $\frac{3}{32}$

C. $\frac{16\sqrt{2}}{\sqrt{3}}$

D. $\frac{8\sqrt{2}}{\sqrt{3}}$

Answer: D

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97. Which of the statements in the following is false in respect of the conic $x^2 - 3y^2 - 4x - 6y - 11 = 0$?

A. asymptotes intersect at a right angle

B. length of the latus rectum is $\frac{4}{\sqrt{3}}$

C. centre of the conic is (2,-1)

D. the eccentricity of the conic is $\frac{2}{\sqrt{3}}$

Answer: A

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98. The locus of a point which moves such that the difference of its distances from two fixed points is always of its distances from two fixed points is always a constant is

A. a circle

B. a straight line

C. a hyperbola

D. an ellipse

Answer: C

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99. Eccentricity of the hyperbola $\frac{x^2}{16} - \frac{y^2}{25} = 1$ is

A. $\frac{\sqrt{41}}{4}$

B. $\frac{\sqrt{41}}{5}$

C. $\frac{3}{4}$

D. $\frac{3}{5}$

Answer: A

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100. The equation to the hyperbola having its eccentricity 2 and the distance between its foci 8 is...

A. $\frac{x^2}{8} - \frac{y^2}{2} = 1$

B. $\frac{x^2}{16} - \frac{y^2}{9} = 1$

C. $\frac{x^2}{12} - \frac{y^2}{4} = 1$

D. $\frac{x^2}{4} - \frac{y^2}{12} =$

Answer: D

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101. If the distance between the foci and the distance between the directrices of the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ are in the ratio $3:2$ then $a:b$ is

A. 0.0840277777777778

B. 1: 2

C. $\sqrt{3}:\sqrt{2}$

D.

Answer: D

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102. If $\frac{x^2}{36} - \frac{y^2}{k^2} = 1$ is a hyperbola, then which of the following statements can be true?

A. (3,1) lies on the hyperbola

B. (-3,1) lies on the hyperbola

C. (5,2) lies on the hyperbola

D. (10,4) lies on the hyperbola

Answer: D

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103. The distance between the foci of the hyperbola $x = 8\sec\theta, y = 6\tan\theta$ is

A. $4\sqrt{7}$

B. 20

C. 10

D. none of these

Answer: B

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104. Which one of the following is independent of α in the hyperbola $\left(0 < \alpha < \frac{\pi}{2}\right) \frac{x^2}{\cos^2 \alpha} - \frac{y^2}{\sin^2 \alpha} = 1$

A. Eccentricity

B. Abscissae of foci

C. directrix

D. vertex

Answer: B

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105. $2x + \sqrt{6}y = 2$ touches the hyperbola $x^2 - 2y^2 = 4$, then the point of contact is :

A. $(-2, \sqrt{6})$

B. $(-5, 2\sqrt{6})$

C. $\left(\frac{1}{2}, \frac{1}{\sqrt{6}}\right)$

D. $(4, -\sqrt{6})$

Answer: D

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106. 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 the hyperbola passing through the foci of the ellipse and $e_1 . e_2 = 1$, then the equation of the hyperbola

A. $\frac{x^2}{9} - \frac{y^2}{16} = 1$

B. $\frac{x^2}{16} - \frac{y^2}{9} = 1$

C. $\frac{x^2}{9} - \frac{y^2}{25} = 1$

D. none of these

Answer: B

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107. The equation of the chord joining the points (x_1, y_1) and (x_2, y_2) on the rectangular hyperbola $xy = c^2$ is :

A. $\frac{x}{x_1 + x_2} + \frac{y}{y_1 + y_2} = 1$

B. $\frac{x}{x_1 - x_2} + \frac{y}{y_1 - y_2} = 1$

C. $\frac{x}{p_1 + y_2} + \frac{y}{x_1 + x_2} = 1$

D. $\frac{x}{y_1 - y_2} + \frac{y}{x_{mathrm(i)} - x_2} = 1$

Answer: A

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108. The locus of a point $P(\alpha, \beta)$ moving under the condition that the line $y = \alpha x + \beta$ is a tangent to the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ is :

A. a parabola

B. a hyperbola

C. an ellipse

D. a circle

Answer: B

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109. The curve represented by $x = a(\cosh\theta + \sinh\theta), y = b(\cosh\theta - \sinh\theta)$ is

A. a hyperbola

B. an cllipse

C. a parabola

D. a circle

Answer: A

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110. Combined equations of asymptotes of the hyperbola $2x^2 - 3y^2 + 4x - 6y = 0,$ is

A. $xy = 0$

B. $(x - 1)(y - 1) = 0$

C. $(x - 1)(y + 1) = 0$

D. $(x + 1)(y + 1) = 0$

Answer: D

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111. Equation of the conic with focus at (1,-1) directrix along $x - y + 1 = 0$ and with eccentricity $\sqrt{2}$ is

A. $x^2 - y^2 = 1$

B. $xy = 1$

C. $2xy - 4x + 4y + 1 = 0$

D. $2xy + 4x - 4y - 1 = 0$

Answer: C

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112. If e_1 and e_2 are the eccentricities of a hyperbola and its conjugate then

A. $e_1^2 + e_2^2 = 3$

B. $e_1 + e_2 = 4$

C. $e_1^2 + e_2^2 = e_1^2 e_2^2$

D. $e_1 = e_2$

Answer: C

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113. If e and e' be the eccentricities of a hyperbolas $xy = c^2$ and $x^2 - y^2 = c^2$, then $e^2 + e'2$ equals :

A. 1

B. 2

C. 3

D. 4

Answer: D

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

A. $\frac{\pi}{6}$

B. $\frac{\pi}{4}$

C. $\frac{\pi}{3}$

D. $\frac{\pi}{2}$

Answer: C

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115. The eccentricity of the hyperbola $9x^2 - 16y^2 + 72x - 32y - 16 = 0$ is

A. $\frac{5}{4}$

B. $\frac{4}{5}$

C. $\frac{9}{16}$

D. $\frac{16}{9}$

Answer: A

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116. The vertices of a hyperbola are (2,0),(-2,0) and the foci are $(3, 0), (-3, 0)$. The equation of the hyperbola is

A. $\frac{x^2}{5} - \frac{y^2}{4} = 1$

B. $\frac{x^2}{4} - \frac{y^2}{5} = 1$

C. $\frac{x^2}{5} - \frac{y^2}{2} = 1$

D. $\frac{x^2}{2} - \frac{y^2}{5} = 1$

Answer: B

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117. The equation of a line which touches both the curves $y^2 = 4x$ and $3x^2 - 4y^2 = 12$ is

A. $y = x - 1$

B. $x + 2y + 1 = 0$

C. $y = x + 1$

D. $y = 1 - x$

Answer: C

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118. The eccentricity of the hyperbola $4x^2 - 9y^2 = 2ax + b^2$ is

A. $\frac{a}{b}$

B. $\frac{\sqrt{b}}{a}$

C. $\frac{\sqrt{13}}{2}$

D. $\frac{\sqrt{13}}{3}$

Answer: D

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119. The product of the perpendicular from any poitn P(x,y) on the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ to its asymptotes is

A. 2

B. 3

C. 4

D. 8

Answer: C

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120. The product of the perpendicular from any poitn P(x,y) on the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ to its asymptotes is

A. 2

B. 3

C. 4

D. 8

Answer: C

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121. If e and e' are the eccentricities of the ellipse $5x^2 + 9y^2 = 45$ and the hyperbola $5x^2 - 4y^2 = 45$ respectively, then ee'=`

A. 9

B. 5

C. 4

D. 1

Answer: D

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122. If the eceentricity of a hyperbola is $\sqrt{7}$ then the eccentricity of its conjugate hyperbola is

A. $\sqrt{2}$

B. $\sqrt{3}$

C. $\sqrt{\frac{3}{2}}$

D. $2\sqrt{3}$

Answer: C

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123. Any point on the hyperbola

$\frac{(x+1)^2}{16} - \frac{(y-2)^2}{4} = 1$ is of the form

A. 1)$(4\sec\theta, 2\tan\theta)$

B. 2)$(4\sec\theta + 1, 2\tan\theta - 2)$

C. 3)$(4\sec\theta - 1, 2\tan\theta + 2)$

D. 4) $(4\sec\theta - 1, 2\tan\theta - 2)$

Answer: C

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124. The equation of the hyperbola in the standard form (with transverse axis along the x -axis) having the length of the latus rectum $= 9$ units and eccentricity $= \frac{5}{4}$ is

A. $\frac{x^2}{16} - \frac{y^2}{18} = 1$

B. $\frac{x^2}{36} - \frac{y^3}{27}. = 1$

C. $\frac{x^2}{64} - \frac{y^2}{36} = 1$

D. $\frac{x^2}{36} - \frac{y^2}{64} = 1$

Answer: C

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125. The line $x + y = \sqrt{2}p$ will touch the hyperbola $4x^2 - 9y^2 = 36,$ if

A. $p^2 = 2$

B. $p^2 = 5$

C. $5p^2 = 2$

D. $2p^2 = 5$

Answer: D

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126. The difference of focal distance of any point on the hyperbola $\frac{x^2}{16} - \frac{y^2}{9} = 1$ is

A. 8

B. 9

C. 0

D. 6

Answer: A

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127. The tangents from a point $\left(2\sqrt{2}, 1\right)$ to the hyperbola $16x^2 - 25y^2 = 400$ include an angle equal to

A. $\frac{\pi}{2}$

B. $\frac{\pi}{4}$

C. π

D. $\frac{\pi}{3}$

Answer: A

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128. The locus of the point of intersection of perpendicular tangents to the hyperbola $\frac{x^2}{3} - \frac{y^2}{1} = 1$ is

A. $x^2 + y^2 = 2$

B. $x^2 + y^2 = 3$

C. $x^2 - y^2 = 3$

D. $x^2 + y^2 = 4$

Answer: A

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129. The angle between the two asymptotes of the hyperbola $\frac{x^2}{16} - \frac{y^2}{9} = 1$ is

A. $\pi - 2\tan^{-1}\left(\frac{3}{4}\right)$

B. $\pi - 2\frac{\tan^{-1}(3)}{2}$

C. $2\tan^{-1}\left(\frac{3}{4}\right)$

D. $\pi - 2\frac{\tan^{-1}(4)}{3}$

Answer: C

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130. The product of the perpendicular from any poitn P(x,y) on the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ to its asymptotes is

A. $\frac{25}{12}$

B. $\frac{144}{25}$

C. 144

D. 25

Answer: B

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131. The equation of the hyperbol whose foci are (-2,0) and (2,0) and eccentricity is 2 is given by :

A. $\frac{(x-1)^2}{25}+\frac{(y-4)^2}{25}=1$

B. $\frac{(x+1)^2}{25}+\frac{(y+4)^2}{75}=1$

C. $\frac{(x-1)^2}{75}-\frac{(y-4)^2}{25}=1$

D. $\frac{(x-1)^2}{25}-\frac{(y-4)^2}{75}=1$

Answer: D

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132. The asymptotes of a hyperbola are the coordinate axes. If the hyperbola passes through (4,2) then its equation is

A. (1,2)

B. (2,2)

C. (1,1)

D. (2,1)

Answer: C

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

A. 30°

B. 1.50°

C. 60°

D. 90^o

Answer: C

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134. The eccentricity of the hyperbola with asymptotes $3x + 4y = 2$ and $4x - 3y + 5 = 0$ is

A. 3

B. 2

C. $\sqrt{2}$

D. 4

Answer: C

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135. The equation of a tangent parallel to $y = x$ drawn to $\frac{x^2}{3} - \frac{y^2}{2} = 1$ is

A. $x - y - 1 = 0$

B. $x - y + 2 = 0$

C. $x + y - 1 = 0$

D. $x + y + 2 = 0$

Answer: A

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136. The eccentricity of the hyperbola

$9x^2 - 16y^2 - 18x - 64y - 199 = 0$ is

A. $\frac{16}{9}$

B. $\frac{5}{4}$

C. $\frac{25}{16}$

D. zero

Answer: B

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137. Let $P(a\sec\theta, b\tan\theta)$ and $Q(a\sec\varphi, b\tan\varphi)$ where $\theta+\varphi=\frac{\pi}{2}$ 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 at P and Q, then $k=$

A. 1) $\frac{a^2+b^2}{a}$

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

C. 3) $\frac{a^2+b^2}{b}$

D. 4) $\left)-\left(\frac{a^2+b^2}{b}\right)\right.$

Answer: D

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138. The equation $\frac{x^2}{1-r} + \frac{y^2}{r-3} + 1 = 0$ represents an ellipse if :

A. a hyperbola

B. an ellipse

C. a circle

D. none of these

Answer: D

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139. If the line $y = 3x + \lambda$ touches the hyperbola $9x^2 - 5y^2 = 45,$ then a value of λ is

A. 6

B. 45

C. 36

D. 15

Answer: A

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140. The equation to the normal to the hyperbola $\frac{x^2}{16} - \frac{y^2}{9} = 1 \text{at} \quad (-4, 0)$ is

A. $x = 0$

B. $2x - 3y = 1$

C. $y = 0$

D. $x = 1$

Answer: C

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141. If the circle $x^2 + y^2 = a^2$ intersects the hyperbola $xy = c^2$ in four points $P(x_1, y_1), Q(x_2, y_2), R(x_3, y_3)$ and $S(x_4, y_4)$ then

A. $y_1 y_2 y_3 y_4 = 2c^4$

B. $x_1 + x_2 + x_3 + x_4 = 0$

C. $y_1 + y_2 + y_3 + y_4 = 2$

D. $x_1 x_2 x_3 x_4 = 2c^4$

Answer: B

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142. The distance of the focua of $x^2 - y^2 = 4$ from the directrix which is nearer to it, is

A. $\sqrt{2}$

B. $2\sqrt{2}$

C. $8\sqrt{2}$

D. $4\sqrt{2}$

Answer: A

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143. The equation of a hyperbola whose asymtotes are $3x \pm 5y=0$ and vertices are $(\pm 5, 0)$ is

A. $3x^2 - 5y^2 = 25$

B. $5x^2 - 3y^2 = 225$

C. $25x^2 - 9y^2 = 225$

D. $9x^2 - 25y^2 = 225$

Answer: D

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144. If e_1 and e_2 are the eccentricities of a hyperbola and its conjugate then prove that $\frac{1}{e_1^2} + \frac{1}{e_2^2} = 1.$

A. 0

B. $\frac{1}{4}$

C. $\frac{1}{2}$

D. 1

Answer: D

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145. The distance between the directrices of the hyperbola $x = 8\sec\theta, y = 8\tan\theta$, is

A. $8\sqrt{2}$

B. $16\sqrt{2}$

C. $4\sqrt{2}$

D. $6\sqrt{2}$

Answer: A

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146. If x = 9 is the chord of contact of the hyperbola $x^2 - y^2 = 9$, then the equation of the corresponding pair of tangents is :

A. $9x^2 - 8y^2 + 18x - 9 = 0$

B. $9x^2 - 8y^2 - 18x + 9 = 0$

C. $9x^2 - 8y^2 - 18x - 9 = 0$

D. $9x^2 - 8y^2 + 18x + 9 = 0$

Answer: B

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147. 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 the hyperbola passing through the foci of the ellipse and $e_1 . e_2 = 1$, then the equation of the hyperbola

A. $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$

B. $\frac{x^2}{16} - \frac{y^2}{9} = -1$

C. $\frac{x^2}{9} - \frac{y^2}{25} = 1$

D. none of these

Answer: B

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148. A hyperbola having the transversal axis of length $2\sin\theta$ is confocal with the ellipse $3x^2 + 4y^2 = 12$ Then its equations is :

A.

$$x^2 opera \to rname(\cos ec)^2\theta - y^2\sec^2\theta = 1$$

B.

$$x^2\sec^2\theta - y^2 opera \to rname(\cos ec)^2\theta = 1$$

C. $x^2\sin^2\theta - y^2\cos^2\theta = 1$

D. x^(2) cos ^(2) theta-y^(2) sin ^(2) theta=1`

Answer: A

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149. For the hyperbola $\frac{x^2}{\cos^2\alpha} - \frac{y^2}{\sin^2\alpha} = 1$, which of the following remains constant when α varies ?

A. abscissae of vertices

B. abscissae of foci

C. eccentricity

D. directrix

Answer: B

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150. An ellipse intersects the hyperbola $2x^2 - 2y^2 = 1$ orthogonally. The eccentricity of the ellipse is reciprocal of that of the hyperbola. If the axes of the ellipse are along the coordinate axes, then equation of ellipse is

A. $x^2 + 2y^2 = 2$ with foci (±1,0)

B. $x^2 + 2y^2 = 2$ with foci $\left(\pm \sqrt{2}, 0 \right)$

C. $x^2 + 2y^2 = 4$ with foci (±1,0)

D. $x^2 + 2y^2 = 4$ with foci $\left(\pm \sqrt{2}, 0 \right)$

Answer: A

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151. The equation of the common tangents to the circle $x^2 + y^2 = 2a^2$ and the parabola $y^2 = 8ax$ is

A. $2x - \sqrt{5}y - 20 = 0$

B. $2x - \sqrt{5}y + 4 = 0$

C. $3x - 4y + 8 = 0$

D. $4x - 3y + 4 = 0$

Answer: B

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152. The circle $x^2 + y^2 - 8x = 0$ and hyperbola $\frac{x^2}{9} - \frac{y^2}{4} = 1$ intersect at the points A and B.

The equation of the circle with AB as its diameter is

A. $x^2 + y^2 - 12x + 24 = 0$

B. $x^2 + y^2 + 12x + 24 = 0$

C. $x^2 + y^2 + 24x - 12 = 0$

D. $x^2 + y^2 - 24x - 12 = 0$

Answer: A

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153. The line $3x + 4y + 5 = 0$ is a tangent to the hyperbola $x^2 - 4y^2 = 5$ at

A. $\sqrt{2}$

B. 2

C. $\sqrt{3}$

D. I

Answer: B

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154. Let $P(6, 3)$ be a point on the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$. If the normal at the point P intersect the x -axis at (9,0) then the eccentricity of the hyperbola is

A. $\sqrt{\frac{5}{2}}$

B. $\sqrt{\frac{3}{2}}$

C. $\sqrt{2}$

D. $\sqrt{3}$.

Answer: B

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155. If e and e' be eccentricity of two conics $S=0$ and $S'=0$ and if $(e)^2+\left(e'\right)^2=3$, then both S and S' can be

A. hyperbolas

B. ellipses

C. parabolas

D. none of these

Answer: A

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156. If the line $y = 2x+\lambda$ be a tangent to the hyperbola $36x^2 - 25y^2 = 3600$ then $\lambda =$

A. 16

B. -16

C. ± 16

D. none of these

Answer: C

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157. The eccentricity of the hyperbola can never be equal to

A. $\sqrt{\frac{9}{5}}$

B. $2\sqrt{\frac{1}{9}}$

C. $3\sqrt{\frac{1}{8}}$

D. 2

Answer: A

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158. The equation of a tangent parallel to $y = x$ drawn to $\frac{x^2}{3} - \frac{y^2}{2} = 1$ is

A. $x - y + 1 = 0$

B. $x - y + 2 = 0$

C. $x - y + 3 = 0$

D. $x - y - 2 = 0$

Answer: A

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159. The value for m for which the line $y = mx + \frac{25}{\sqrt{3}}$ is a normal to the conic $\frac{x^2}{16} - \frac{y^2}{9} = 1$ is

A. $\pm \frac{2}{\sqrt{3}}$

B. $\sqrt{3}$

C. $-\frac{\sqrt{3}}{2}$

D. none of these

Answer: A

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160. The value 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

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161. If t is a parameter, then $x = a\left(t + \frac{1}{t}\right)$, $y = b\left(t - \frac{1}{t}\right)$ represents

A. an ellipse

B. a circle

C. a pair of lines

D. a hyperbola

Answer: D

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162. The product of the lengths of perpendiculars drawn from any point on the hyperbola $x^2 - 2y^2 - 2 = 0$ to its asymptotes is

A. $\frac{1}{2}$

B. $\frac{2}{3}$

C. $\frac{3}{2}$

D. 2

Answer: B

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