MATHS

BOOKS - HIMALAYA MATHS

(KANNADA ENGLISH)

PARABOLA

Question Bank

1. Vertex of the parabola $y^2 - 8x - 4y + 4 = 0$ at

A. (2,-3)

B. (0,2)

C. (-3,-2)

D. (-2,3)

Answer: B

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2. Focus of the parabola $y^2 = 16x$ is at

A. (-4,0)

B. (4,0)

C. (0,-4)

D. (0,4)

Answer: B

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3. Focus of the parabola $y = 2x^2 + x$ is

A. (0,0)

B. $\left(\frac{1}{2}, \frac{1}{4}\right)$

C. $\left(-\frac{1}{4}, 0\right)$

D. $\left(-\frac{1}{4}, \frac{1}{8}\right)$

Answer: C

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4. The focus of the parabola $y^2 = 4(b-a)(x-a)$ is

A. (a, b)

B. $(b, 0)$

C. $(b-a, 0)$

D. $(a+b, 0)$

Answer: B

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5. The focus of the parabola $x^2 + 12y = 0$ is at

A. (3,0)

B. (-3,0)

C. (0,3)

D. (0,-3)

Answer: D

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6. Directrix of the parabola $y^2 = 16x$ is

A. $y = 4$

B. $x = -4$

C. $x = 4$

D. $y = -4$

Answer: B

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7. If the line x -1=0 is the directrix of the parabola $y^2 - kx + 8 = 0$ then one of the values of k is

A. $\frac{1}{6}$

B. 8

C. 4

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

Answer: C

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8. The directrix of the parabola $y^2 + 8x = 0$ is the line

A. $y = 2$

B. $y + 2 = 0$

C. $x + 2 = 0$

D. $x = 2$

Answer: D

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9. The parabola $(y+1)^2 = a(x-2)$ passes through the point (1,-2) . The equation of the directrix is

A. $4x + 1 = 0$

B. $4x + 9 = 0$

C. $4x - 1 = 0$

D. $4x - 9 = 0$

Answer: D

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10. The directrix of the parabola $2x^2 + 9y = 0$ is given by

A. $8x = 9$

B. $8x + 9 = 0$

C. $8y = 9$

D. $8x + 9 = 0$

Answer: C

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11. The directrix of the parabola $y^2 = 16x$ is

A. $y = 4$

B. $y = -4$

C. $x = -4$

D. $x = 4$

Answer: C

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12. The equation of the axis of $y^2 - x + 4y + 5 = 0$ is

A. $y + 2 = 0$

B. $x + 1 = 0$

C. $x - 1 = 0$

D. $y - 2 = 0$

Answer: A

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13. The length of the latus rectum of the parabola $3y^2 + 6y + 8x - 5 = 0$

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

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

C. 3

D. 8

Answer: A

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14. The parabola $y^2 = 4ax$ passes through (2,-6) then the length of the latus rectum is

A. 18

B. 9

C. 6

D. 16

Answer: A

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15. The focus of the parabola is at (3,3) and its directrix is $3x - 4y = 2,$ then its latus rectum is

A. 2

B. 3

C. 4

D. 5

Answer: A

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16. The equation of the parabola whose vertex and focus are $(a, 0)$ and $(b, 0)$ is $(b > a)$

A. $y^2 = 4(a - b)(x - a)$

B. $y^2 = 4(b-a)(x-b)$

C. $y^2 = 4(b-a)(x-a)$

D. $y^2 = 4(a-b)(x-b)$

Answer: C

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17. The line $x + y + 2 = 0$ touches $y^2 = 8x$ at

A. (-4,2)

B. (2,-4)

C. (6,-4)

D. (-4,6)

Answer: B

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18. The equation of the tangent to $y^2 = 24x$ inclined at an angle 45° with x -axis is,

A. $y = x + 2$

B. $y = x + 3$

C. $y = x + 6$

D. $y = x + 4$

Answer: C

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19. The line $x + y + 1 = 0$ touches the parabola $y^2 = kx$, then the value of $k =$

A. -4

B. 4

C. 3

D. -3

Answer: B

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20. The line $y = x\sqrt{2} + 4\sqrt{2}$ is a normal to $y^2 = 4ax$ then $a =$

A. 2

B. -2

C. 1

D. -1

Answer: D

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21. The line $y = 2x + k$ is a normal to the parabola $y^2 = 4x$, then $k =$

A. 12

B. -12

C. 10

D. -10

Answer: B

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22. The equation of the normal to the parabola $y^2 = 4x$ which passes through the point (3,0) is

A. $y = 0$

B. $y = x - 3$

C. $y = -x + 3$

D. all of these

Answer: D

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23. Equation of the normal of $y^2 = 20x$ at (5,10) is

A. $x - y + 5 = 0$

B. $x + y - 15 = 0$

C. $x + y - 5 = 0$

D. $x - y + 15 = 0$

Answer: B

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24. The tangent to the parabola $y^2 = 8x$ parallel to the line $2y + x = 0$ is

A. $2y + x + 6 = 0$

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

C. $2y + x = 6$

D. $2y + x = 8$

Answer: B

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25. The line $y = 2x - 12$ is a normal to $y^2 = 4x$ at the point

A. (4,4)

B. (-4,4)

C. (4,-4)

D. (-4,-4)

Answer: C

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26. Equation of the normal to the parabola $y^2 = 4x$ which is perpendicular to $x + 3y + 1 = 0$

A. $3x - y - 23 = 0$

B. $3x - y + 33 = 0$

C. $3x - y - 33 = 0$

D. $3x + y - 33 = 0$

Answer: C

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27. If $y = 2x + c$ is a tangent to the parabola $y^2 = 16x$ then $c =$

A. 4

B. 2

C. 1

D. none of these

Answer: B

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28. The line $x + y = k$ touches the parabola $y = x - x^2$ if $k =$

A. 0

B. -1

C. 1

D. none of these

Answer: C

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29. The line $y = 2x - 12$ is a normal to $y^2 = 4x$ at the point

A. $a^3 + 2a + 2 = 0$

B. $a^3 - 2a + 2 = 0$

C. $a^3 - a + 2 = 0$

D. $a^3 + a + 2 = 0$

Answer: A

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30. Focus of the parabola $y^2 = 16x$ is at

A. $12x + 5y - 48 = 0$

B. $12x - 5y - 48 = 0$

C. $12x - 5y + 48 = 0$

D. $12x + 5y + 168 = 0$

Answer: B

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31. The point of intersection of the tangents at the ends of the laturs rectum of the parabola $y^2 = 4x$ is

A. (0,0)

B. (0,1)

C. (-1,0)

D. (1,0)

Answer: C

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32. If $2x + y + a = 0$ is a focal chord of the parabola $y^2 + 8x = 0$ then $a =$

A. -4

B. 4

C. -2

D. 2

Answer: B

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33. If (x_1, y_1) and (x_2, y_2) are the ends of the focal chord of $y^2 = 4ax$ then $x_1x_2 + y_1y_2 =$

A. $-3a^2$

B. $3a^2$

C. $-4a^2$

D. $4a^2$

Answer: A

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34. The point on the parabola $y^2 = 8x$ whose distance from the focus is 8 , has x - coordinates

A. $\underline{0}$

B. 2

C. 4

D. 6

Answer: D

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35. The co - ordinates of a point on the parabola $y^2 = 8x$ whose focal distance is 4 are :

A. $\left(\frac{1}{2}, \pm 2\right)$

B. $\left(1, \pm 2\sqrt{2}\right)$

C. (2,±4)

D. none of these

Answer: C

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36. The number of tangents that can be drawn from (3,2) to the parabola $y^2 = 4x$ are

A. 0

B. 1

C. 2

D. 4

Answer: A

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37. The product of the abscissae of the extremities of a focal chord of a parabola $y^2 = 16x$ is

A. 16

B. 8

C. 4

D. 1

Answer: A

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38. The equation of the common tangent to the parabolas $y^2 = 4x$ and $x^2 = 4y$ is

A. $x + y - 1 = 0$

B. $x + y + 1 = 0$

C. $x - y - 1 = 0$

D. none of these

Answer: B

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39. Two tangents are drawn from the point (-2,-1) to the parabola $y^2 = 4x$. If α is the angle between these tangents, then $\tan\alpha =$

A. 3

B. $\frac{1}{3}$

C. 2

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

Answer: A

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40. The angle between the two tangents drawn from the point (1,4) to the parabola $y^2 = 12x$ is

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

B. $\tan^{-1}\left(\frac{1}{3}\right)$

C. $\tan^{-1}(2)$

D. none of these

Answer: A

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41. The vertex of the parabola is (4,0) and the y -axis is the directrix. Then the focus is

A. (4,0)

B. (0,4)

C. (8,0)

D. (0,8)

Answer: C

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42. A tangent to the parabola $y^2 = ax$ makes an angle 45° with the x -axis, then its point of contact is

A. $\left(\frac{a}{2}, \frac{a}{4}\right)$

B. $\left(-\frac{a}{2}, \frac{a}{4}\right)$

C. $\left(\frac{a}{4}, \frac{a}{2}\right)$

D. $\left(-\frac{a}{4}, \frac{a}{2}\right)$

Answer: C

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43. If $y = mx + 4$ is a tangent to $y^2 = 6x$, then $m =$

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

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

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

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

Answer: D

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44. If y_1 and y_2 are the ordinates of two points P and Q on the parabola $y^2 = 4ax$ and y_3 is

the ordinate of the point of intersection of the tangents at P and Q then, y_1, y_3 and y_2 are in

A. 1)(AP)`

B. 2)(GP)`

C. 3)HP

D. 4)no such relation

Answer: A

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45. If (0,4) and (0,2) are respectively the vertex and focus of a parabola, then its equation is

A. $x^2 + 8y = 32$

B. $y^2 + 8x - 32$

C. $x^2 - 8y = 32$

D. $y^2 - 8x = 32$

Answer: A

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46. The distance between the directrix and latus rectum of a parabola is 4 units. The length of the latus rectum is

A. 4 units

B. 2 units

C. 8 units

D. 16 units

Answer: C

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47. The directrix of the parabola $y^2 = 16x$ is

A. (0,-2)

B. (-2,0)

C. (0,0)

D. (0,3)

Answer: C

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48. The co - ordinates of a point on the parabola $y^2 = 8x$ whose focal distance is 4 are :

A. $\left(\frac{1}{2}, \pm 2\right)$

B. $\left(1, \pm 2\sqrt{2}\right)$

C. (2,±4)

D. $\left(3, \pm 2\sqrt{6}\right)$

Answer: C

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49. If $x = my + c$ is a normal to the parabola $x^2 = 4ay$, then the value of c is

A. $-2am - am^3$

B. $2am + am^3$

C. $-\frac{2a}{m} - \frac{a}{m^3}$

D. $\frac{2a}{m} + \frac{a}{m^3}$

Answer: A

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50. Angle substended by the latus rectum at the origin is

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

B. $\pi - \frac{\tan^{-4}(4)}{3}$

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

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

Answer: B

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51. Locus of the point of intersection of normals to the parabola $y^2 = 4ax$ at the end points of its focal chord is

A. $y^2 = a(x - 3a)$

B. $y^2 = a(x + 3a)$

C. $y^2 = a(x + a)$

D. $y^2 = a(x - a)$

Answer: A

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52. The tangent to a parabola at the vertex A and any point P meet at Q if S is the focus then SP ,SQ SA are in

A. $A.P$

B. $mathrm(G)$.P

C. $mathrm(H)$.P

D. none of these

Answer: B

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53. An equilateral triangle is inscribed in the parabola $y^2 = 4ax$, where one vertex is at the vertex of the parabola. Find the length of the side of the triangle.

A. $4a\sqrt{3}$

B. $6a\sqrt{3}$

C. $2a\sqrt{3}$

D. $8a\sqrt{3}$

Answer: D

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54. If $2x + y + \lambda = 0$ is a normal to the parabola $y^2 = 8x$, then $\lambda =$

A. 12

B. -12

C. 24

D. -24

Answer: C

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55. Two ends of the latus rectum of a parabola are (4,6) and $(-2, 6)$, then the equation of one of the parabola is

A. $(x-1)^2 = 6(y-6)$

B. $(x-1)^2 = -6\left(y - \frac{9}{2}\right)$

C. $\left(y - \frac{9}{2}\right)^2 = 6(x-1)(.$

D. $\left(y - \frac{9}{2}\right)^2 - 6(x-1)$

Answer: A

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56. In each of the following find the coordinates of the focus , axis of the parabola , the equation of the directrix and the length of the latus rectum.

$y^2 = -8x$

A. (3,0)

B. (3,2)

C. (3,3)

D. (0,3)

Answer: C

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57. The line $2x - 3y + 5 = 0$ is a tangent to the parabola $y^2 = 4ax$, then $a =$

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

B. $\frac{10}{9}$

C. $\frac{11}{9}$

D. $\frac{7}{9}$

Answer: B

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58. If t is a parameter of one end of a focal chord of the parabola $y^2 = 4ax$ then its length is

A. $a\left(t - \frac{1}{t}\right)^2$

B. $a\left(t + \frac{1}{t}\right)$

C. $a\left(t - \frac{1}{t}\right)$

D. $a\left(t + \frac{1}{t}\right)^2$

Answer: D

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59. The line $y = mx + 2$ is a tangent to the parabola $y^2 = 4x$, then $m =$

A. 1

B. 2

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

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

Answer: D

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60. The condition for the line $Lx + my + n = 0$ to be a tangent for $x^2 = y$ is

A. $P^2 = 2mn$

B. $P^2 = 2m^2n^2$

C. $l^2 = 3mn$

D. $l^2 = 4mn$

Answer: D

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

A. (4,4) or (4,-4)

B. $\left(3, 2\sqrt{3}\right)$ or $\left(3, -2\sqrt{3}\right)$

C. (25,10) or (25,-10)`(mathrm

D. (16,8)` or (16,-8)

Answer: C

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62. Vertex of the parabola $y^2 + 2y + x = 0$ lies in the quadrant,

A. first

B. second

C. third

D. fourth

Answer: D

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63. The equation of the tangent to the parabola $y = x^2 - x$ at the point $x = 1,$ is

A. $y = x + 4$

B. $y = 2 - x$

C. $x + y + 3 = 0$

D. $y = x - 1$

Answer: D

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64. The vertex of a parabola is at the origin and the directrix is $x + 5 = 0$. The length of the latus rectum is equal to

A. 50

B. 20

C. 40

D. 10

Answer: B

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65. The point of intersection of the latus rectum and the axis of the parabola $y^2 + 4x + 2y - 7 = 0$ is

A. (1,1)

B. (1,-1)

C. (-1,1)

D. (-1,-1)

Answer: B

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66. The equation of the parabola whose vertex is $(2, -1)$, axis is vertical and passing through the point (4,-3) is

A. 1)$(x-2)^2 = 2(y+1)$

B. 2)$(x+2)^2 - 2(y-1)$

C. 3)$(x-2)^2 = -2(y+1)$

D. 4)$(x+2)^2 = -2(y-1)$

Answer: C

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67. The length of the latus rectum of the parabola is $3y^2 + 6y + 8x - 5 = 0$ is

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

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

C. $\frac{8}{5}$

D. $\underline{4}$

Answer: A

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68. The length of the latus rectum of the parabola whose directrix is $2x - y + 3 = 0$ and focus is (2,-3) is

A. $2\sqrt{5}$

B. $\sqrt{5}$

C. $4\sqrt{5}$

D. $3\sqrt{5}$

Answer: C

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69. The focal distance of the point (other than the origin) on the parabola $y^2 = 32x$ whose ordinate is twice the abseissa is

A. 8

B. 16

C. 32

D. 4

Answer: B

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70. If the line $y = mx + c$ is a tangent to the parabola $y^2 = 4a(x + a)$, then $c =$

A. $ma + \frac{a}{m}$

B. $ma - \frac{a}{m}$

C. $\frac{a}{m}$

D. $-\frac{a}{m}$

Answer: A

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71. The line $x + y = 1$ is a tangent to the parabola $y^2 - y + x = 0,$ at

A. $\left(\frac{3}{2}, -\frac{1}{2}\right)$

B. $(0, 1)$

C. $(1, 0)$

D. $\left(-\frac{1}{2}, \frac{3}{2}\right)$

Answer: B

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72. The point on the parabola $y^2 = 8x$ where the normal is inclined at 30° with the x -axis is

A. $\left(\frac{2}{3}, \frac{4}{\sqrt{3}}\right)$

B. $\left(\frac{2}{5}, \frac{4}{\sqrt{5}}\right)$

C. $\left(\frac{2}{3}, -\frac{4}{\sqrt{3}}\right)$

D. $\left(\frac{2}{5}, -\frac{4}{\sqrt{5}}\right)$

Answer: C

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73. t_1 and t_2 are the parameters of the end-points f a focal chord of a parabola. Then

A. at angle

B. on the directrix

C. on the tangent at vertex

D. both (a) and (b)

Answer: D

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74. The latus rectum of the parabola $y^2 = 5x + 4y + 1$ is

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

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

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

D. π

Answer: C

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75. The point on the parabola $y^2 = 16x$ where the tangent makes an angle 60° with the x - axis is

A. $\left(\frac{4}{3}, \frac{8}{\sqrt{3}}\right)$

B. $\left(\frac{8}{\sqrt{3}}, \frac{4}{3}\right)$

C. $\left(\frac{4}{\sqrt{3}}, \frac{8}{3}\right)$

D. $\left(\frac{4}{3}, -\frac{8}{\sqrt{3}}\right)$

Answer: A

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76. The point of intersection of the tangents at the ends of the latus rectum of the parabola $y^2 = 8x$ is

A. (2,0)

B. (-2,0)

C. (0,2)

D. (0,-2)

Answer: B

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

A. $y = \pm(x + 2a)$

B. $y = \pm (3x - a)$

C. $y = \pm (x - 2a)$

D. $y = \pm (3x + a)$

Answer: A

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78. The equation of common tangents to the parabola $y^2 = 8x$ and hyperbola $3x^2 - y^2 = 3$ are

A. $2x \pm y + 1 = 0$

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

C. $x \pm 2y + 4 = 0$

D. $x \pm 2y - 3 = 0$

Answer: A

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79. The common tangent to the parabolas $y^2 = 8x$ and $x^2 = 8y$ is

A. $x + y - 2 = 0$

B. $x + y + 8 = 0$

C. $x + y + 2 = 0$

D. $x + y - 8 = 0$

Answer: C

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80. The equation of the common tangent to the curves $y^2 = 8x$ and $xy = -1$ is :

A. $x + y - 2 = 0$

B. $x + y + 2 = 0$

C. $x - y + 2 = 0$

D. $x - y - 2 = 0$

Answer: B

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81. The locus of the midpoints of the chords which are drawn from the vertex of the parabola $y^2 = 4ax$ is

A. $y^2 = 4ax$

B. $y^2 = 8ax$

C. $y^2 = 2ax$

D. $y^2 = 16x$

Answer: C

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82. The line $x - 2y + 4a = 0$ is a tangent to the parabola $y^2 = 4ax$ at

A. $(2a, 2a)$

B. $(3a, 3a)$

C. (a, a)

D. $(4a, 4a)$

Answer: D

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83. The line $y = mx + 2$ is a tangent to the parabola $y^2 = 4x$, then $m =$

A. 1

B. 2

C. 3

D. 4

Answer: A

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84. The equation of the common tangent to $y^2 = 2x$ and $x^2 = 16y$ is

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

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

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

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

Answer: A

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85. The axis of the parabola $9y^2 - 16x - 12y - 57 = 0$ is

A. $3y = 2$

B. $x + 3y = 3$

C. $2x = 3$

D. $y = 3$

Answer: A

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86. t_1 and t_2 are the parameters of the end-points f a focal chord of a parabola. Then

A. 1

B. -1

C. 2

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

Answer: B

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87. The length of the perpendicular from the focus of the parabola $y^2 = 8x$ onto the tangent at (2,-4) is

A. $2\sqrt{2}$

B. $3\sqrt{2}$

C. $4\sqrt{2}$

D. $\sqrt{2}$

Answer: A

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88. Two tangents are drawn from the point (h, k) to the parabola $y^2 = 4x$, such that the slope of one tangent is twice the other, then

A. $9k = 2h^2$

B. $9h = 2k^2$

C. $2h = 9k^2$

D. $h = k$

Answer: B

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89. The length of the focal chord drawn to $y^2 = 8x$, through the point whose parametric value is 2 is

A. 5

B. $\frac{5}{2}$

C. $\frac{25}{2}$

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

Answer: C

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90. The vertex of the parabola $(y-2)^2 = 16(x-1)$ is

A. $6x = 11$

B. $6x + 11 = 0$

C. $11x = 6$

D. $11x + 6 = 0$

Answer: A

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91. Axis of the parabola $x^2 - 4x - 4y + 10 = 0$ is

A. $y + 3 = 0$

B. $y - 3 = 0$

C. $x + 2 = 0$

D. $x - 2 = 0$

Answer: D

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92. The equation of the tangent to the parabola $y^2 = 8x$ making an angle 30° with the x -axis is

A. $x - \sqrt{3}y - 2 = 0$

B. $3x - \sqrt{3}y + 4 = 0$

C. $x - \sqrt{3}y + 6 = 0$

D. $x - \sqrt{3}y = 0$

Answer: C

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93. The equation of the tangent to the parabola $y^2 = 4x + 5$ parallel to the line $y = 2x + 7$ is

A. $y = 2x + 3$

B. $y = 2x - 3$

C. $y = 2x + 1$

D. $y = 2x + 4$

Answer: A

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94. The equation of the tangent to the parabola $(y-2)^2 = 8(x+1)$, which is parallel to the line $y = 2x - 3$ is

A. $y = 2x - 5$

B. $y = 2x + 5$

C. $y = 2x - 2$

D. $y = 2x + 2$

Answer: B

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95. If the focus of a parabola divides a focal chord of the parabola in segment of length 3

and 2 the length of the latus rectum of the parbola is

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

B. $\frac{7}{5}$

C. $\frac{24}{5}$

D. $\frac{12}{5}$

Answer: C

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96. The focus of the parabola $x^2 - 8x + 2y + 7 = 0$ is

A.) $\left(0, -\frac{1}{2}\right)$

B. $\left(4, \frac{9}{2}\right)$

C. (4,4)

D. $\left(-4, -\frac{9}{2}\right)$

Answer: C

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97. Length of focal of the parabola $y^2 = 4ax$ making an angle α with the axis of the parabola is

A. 8

B. 4

C. 16

D. 12

Answer: C

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98. The axis of the parabola $9y^2 - 16x - 12y - 57 = 0$ is

A. $3y = 2$

B. $y = 3$

C. $2x = 3$

D. $x = 3$

Answer: A

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99. Consider the equation of the parabola $y^2 + 4ax = 0$ where $a > 0$ which of the following is false

A. Vertex of the parabola is at the origin

B. Focus of the parabola is $(a, 0)$

C. Directrix of the parabola is $x = a$

D. Tangent at the vertex is $x = 0$

Answer: B

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100. If x+y=k is a normal to the parabola $y^2 = 12x$ then it touches the parabola

A. $y^2 = -9x$

B. $y^2 = -12x$

C. $y^2 = -16x$

D. $y^2 = -36x$

Answer: D

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101. Range of values of k for which the point (k-1) is exteriro to both the parabolas $y^2 = |x|$ is

A. $-1 < k < 0$

B. $-1 < k < 1$

C. $0 < k < 1$

D. $-1 < k < 1$

Answer: B

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102. If PSP' is a focal chord of the parabola $y^2 = 4ax$ and SL is its semi latus rectum then SP, SL, SP' are in

A. a

B. $2a$

C. $3a$

D. $4a$

Answer: B

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103. A triangle formed by the tangents to the parabola $y^2 = 4ax$ at the ends of the latus rectum and the double ordinate through the focus is

A. isosceles

B. equilateral

C. angled isosceles

D. dependent on ' a ' for its nature

Answer: C

Watch Video Solution

104. If b and c are the length of the segments of any focal chord of a parabola $y^2 = 4ax$ then the length of the semi latus rectum is

A. $\frac{b+c}{2}$

B. $\frac{bc}{b+c}$

C. $\frac{2bc}{b+c}$

D. $\sqrt{bc}$

Answer: C

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105. The focus of the parabola $y = 2x^2 + x$ is

A. (0,0)

B. $\left(\frac{1}{2}, \frac{1}{4}\right)$

C. $\left(-\frac{1}{4}, 0\right)$

D. $\left(-\frac{1}{4}, \frac{1}{8}\right)$

Answer: C

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106. The tangents from the origin to the parabola $y^2 = 4(x-1)$ are inclined at an angle

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

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

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

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

Answer: B

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107. The tangents from the point (-2,5) to the parabola $y^2 = 8x$ are inclined at an angle

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

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

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

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

Answer: C

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108. Given the ends of latus rectum, the number of parabolas that can be drawn is

A. 0

B. 1

C. 2

D. ≥ 3

Answer: C

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109. The equation of the lines joining the vertex of the parabola $y^2 = 6x$ to the points on ti which have abscissa 24 are

A. $y \pm 2x = 0$

B. $2y \pm x = 0$

C. $x \pm 2y = 0$

D. $2x \pm y = 0$

Answer: B

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110. The area of the triangle formed by the lines joining the vertex of the parabola $x^2 = 12y$ to the ends of latus rectum is

A. $12sq$, units

B. 16 sq. units

C. 18 sq. units

D. 24 sq. units

Answer: C

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111. If the focus of a parabola is (0,-3) and its directrix is y =3 then its equation is

A. $x^2 = -12y$

B. $x^2 = 12y$

C. $y^2 = -12x$

D. $y^2 = 12x$

Answer: A

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112. If the vertex of a parabola is the point (-3, 0) and the directrix is the line x + 5 = 0, then its equation is

A. $y^2 = 8(x + 3)$

B. $x^2 = 8(y + 3)$

C. $y^2 = -8(x + 3)$

D. $y^2 = 8(x + 5)$

Answer: A

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113. The equation of the tangent to the parabola $y^2 = 16x$ at (1,4) is

A. $x = 4y$

B. $y = 4x$

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

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

Answer: D

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114. t_1 and t_2 are the parameters of the end-points f a focal chord of a parabola. Then

A. $t_1 + t_2 = -1$

B. $t_1 t_2 = -1$

C. $t_1 t_2 = 1$

D. $t_1 + t_2 = 1$

Answer: B

Watch Video Solution

115. The vertex of the parabola $y^2 = x + 4y + 3$ is

A. (-7,2)

B. (7,-2)

C. (7,2)

D. (-7,-2)

Answer: A

Watch Video Solution

116. The equation of the parabola with focus (2,0) and directirix $x + 3 = 0$ is

A. $y^2 - 10x + 5 = 0$

B. $y^2 - 10x - 5 = 0$

C. $x^2 - 10y + 5 = 0$

D. $x^2 - 10y - 5 = 0$

Answer: B

Watch Video Solution

117. If $2y = 5x + k$ is a tangent to the parabola $y^2 = 6x$ then k =

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

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

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

D. none of these

Answer: D

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118. The focus of the parabola $y^2 - 4y - 8x + 4 = 0$ is

A. (1,1)

B. (1,2)

C. (2,1)

D. (2,2)

Answer: D

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119. The tangents at the points $\left(at_1^2, 2at_1\right), \left(at_2^2, 2at_2\right)$ are right angles if

A. $t_1 \cdot t_2 = -1$

B. $t_1 \cdot t_2 = 1$

C. $t_1 \cdot t_2 = 2$

D. $t_1 \cdot t_2 = -2$

Answer: A

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120. Focus of the parabola $y^2 - 8x - 32 = 0$ is at

A. (0,2)

B. (4,0)

C. (2,0)

D. (-2,0)

Answer: D

Watch Video Solution

121. The directrix of the parabola $y^2 = 16x$ is

A. $y = 4$

B. $y = -4$

C. $x = -4$

D. $x = 4$

Answer: C

Watch Video Solution

122. The vertex of the parabola $y^2 = 5x + 4y + 1$ is

A. (-1,2)

B. (1,-2)

C. (0,3)

D. (2,-2)

Answer: A

Watch Video Solution

123. The axis of the parabola $2x^2 + 5y - 3x + 4 = 0$ is

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

B. $y = \frac{3}{4}$

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

D. $x - 3y = 5$

Answer: A

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124. The tangents drawn at the extremities of a focal chord of the parabola $y^2 = 16x$

A. intersect on the tangent at the vertex

B. intersect on the directrix

C. intersect at angle 45°

D. are parallel

Answer: B

Watch Video Solution

125. A parabola has its focus at (-4,0) and its directrix is $x = 4$. Its equation is

A. $x^2 = -8y$

B. $y^2 = -16x$

C. $x^2 = 9y$

D. $y^2 = 8x$

Answer: B

Watch Video Solution

126. If two tangents drawn from a point p to the parabola $y^2 = 4x$ are at right angles then the locus of p is

A. $x - 1 = 0$

B. $2x + 1 = 0$

C. $x + 1 = 0$

D. $2x - 1 = 0$

Answer: C

Watch Video Solution

127. If $y = 2x + k$ is a tangent to $y^2 = 8x$, then $k =$

A. 2

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

C. 3

D. 1

Answer: D

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128. The equation of the parabola whose vertex is (1,-2) and focus is (1,-1) is

A. $(x-1)^2 = 4(y+2)$

B. $(x+1)^2 = 4(y-2)$

C. $(x+1)^2 = 4(y+2)$

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

Answer: A

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129. Focus of the parabola $(y-2)^2 = 20(x+3)$ is

A. (2,-3)

B. (2,2)

C. (-3,2)

D. (3,-2)

Answer: B

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130. Two perpendicular tangents to $y^2 = 4ax$ always intersect on the line

A. $x + 4a = 0$

B. $x + 2a = 0$

C. $x = a$

D. $x + a = 0$

Answer: D

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131. Equation of the tangent at $(-4, -4)$ on $x^2 = -4y$ is

A. $2x - y + 4 = 0$

B. $2x + y - 4 = 0$

C. $2x - y - 12 = 0$

D. $2x + y + 4 = 0$

Answer: A

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132. The vertex of the parabola $(y-2)^2 = 16(x-1)$ is

A. (1,2)

B. (-1,2)

C. (1,-2)

D. (2,1)

Answer: A

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133. Equation of the parabola with its vertex at (1,1) and focus (3,1) is

A. $(x-3)^2 = 8(y-1)$

B. $(y-1)^2 = 8(x-1)$

C. $(y-1)^2 = 8(x-3)$

D. $(x-1)^2 - 8(y-1)$

Answer: B

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134. The equation to the parabola whose focus is $(1, -1)$ and the directrix is x+y+7=0 is

A. $x^2 - 18x - 10y - 45 = 0$

B. $x^2 + y^2 - 2xy - 18x - 10y = 0$

C. $x^2 + y^2 - 2xy - 18x - 10y - 45 = 0$

D. $x^2 + y^2 - 18x - 10y - 45 = 0$

Answer: C

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135. The directrix of the parabola

$x^2 - 4x - 8y + 12 = 0$

A. $y = 0$

B. $x = 1$

C. $y = -1$

D. $x = -1$

Answer: C

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136. If(0, 6) and (0,3) are respectively the vertex & focus of a parabola then its equation is

A. $x^2 + 12y = 72$

B. $x^2 - 12y = 72$

C. $y^2 - 12x = 72$

D. $y^2 + 12x = 72$

Answer: A

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137. The equation of the line which is tangent to both the circle $x^2 + y^2 = 50$ and the parabola $y^2 = 40x$ is

A. (3,4),(-13,4)

B. (5,-8),(-5,8)

C. (3,-4),(13,4)

D. (-3,-4),(13,-4)

Answer: A

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138. The equation of the line which is a tangent to both the circle $x^2 + y^2 = 5$ and the parabola $y^2 = 40x$ is

A. $2x - y + 5 = 0$

B. $2x - y \pm 5 = 0$

C. $2x + y + 5 = 0$

D. $2x - y - 5 = 0$

Answer: A

Watch Video Solution

139. The directrix of the parabola $x^2 - 4x - 8y + 12 = 0$

A. $y = 0$

B. $x = 1$

C. $y = -1$

D. $x = -1$

Answer: C

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

A. $x = \pm (y + 2a)$

B. $y = \pm (x + 2a)$

C. $x = \pm (y + a)$

D. $x = \pm (y + a)$

Answer: B

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141. The equation of the directix of the parabola $y^2 + 4y + 4x + 2 = 0$ is

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

B. $x = -1$

C. $x = 1$

D. $x = -\frac{3}{2}$

Answer: D

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142. The focal chord of $y^2 = 16x$ is tangent to $(x-6)^2 + y^2 = 2$ then the possible values of the slope of this chord are

A. 1,-1

B. $-\frac{1}{2}, 2$

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

D. $\frac{1}{2}, 1$

Answer: A

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143. The normal at the point $\left(bt_1^2, 2bt_1\right)$ on a parabola meets the parabola again in the point $\left(bt_2^2, 2bt_2\right)$, then :

A. $t_2 = -t_1 + \frac{2}{t_1}$

B. $t_2 = t_1 - \frac{2}{t_1}$

C. $t_2 = t_1 + \frac{2}{t_1}$

D. $t_2 = -t_1 - \frac{2}{t_1}$

Answer: D

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144. A point an the parabola $y^2 = 18x$ at which the ordinate increases at twice the rate of the abscissa is :

A. (2,4)

B. (2,-4)

C. $\left(-\frac{9}{8}, \frac{9}{2}\right)$

D. $\left(\frac{9}{8}, \frac{9}{2}\right)$

Answer: D

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145. If $a \neq 0$ and the line 2bx+3cy+4d=0 passes through the points of intersection of the parabolas $y^2 = 4ax$ and $x^2 = 4ay$ then

A. $d^2 + (2b + 3c)^2 = 0$

B. $d^2 + (3b + 2c)^2 = 0$

C. $d^2 + (2b - 3c)^2 = 0$

D. $d^2 + (3b - 2c)^2 = 0$

Answer: A

Watch Video Solution

146. Let p be the point (1,0) and Q a point on the locurs $y^2 = 8x$ the locus of mid point of PQ is

A. $x^2 + 4y + 2 = 0$

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

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

D. $y^2 + 4x + 2 = 0$

Answer: C

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147. The locus of the vertices of the family of parabolas $y = \frac{a^3x^2}{3} + \frac{a^2x}{2} - 2a$ is

A. $xy = \frac{35}{16}$

B. $xy = \frac{35}{105}$

C. $xy = \frac{105}{35}$

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

Answer: C

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148. The slopes of the normal to the parabola $y^2 = 4ax$ intersecting at a point on the axis of the parabola at a distance 4a from its vertex are in

A. H.P

B. $mathrm(G) \cdot mathrm(P)$

C. A.P

D. none of these

Answer: C

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149. If the line x -1=0 is the directrix of the parabola $y^2 - kx + 8 = 0$ then one of the values of k is

A. $\frac{1}{8}$

B. 8

C. 4

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

Answer: C

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150. Equation of the common tangent touching the circle $(x-3)^2+y^2=9$ and the parabola $y^2=4x$ above the x axis is

A. $\sqrt{3}y=3x^2+1$

B. $\sqrt{3}y=-(x+3)$

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

D. $\sqrt{3}y=-(3x+1)$

Answer: C

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151. The equation of the directix of the parabola $y^2 + 4y + 4x + 2 = 0$ is

A. $x = -1$

B. $x = 1$

C. $x = -\frac{3}{2}$

D. $cx = \frac{3}{2}$

Answer: D

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152. The locus of the mid point of the line segment joining the focus to a moving point on the parbola $y^2 = 4ax$ is another parabola with directix

A. $x = -a$

B. $x = -\frac{a}{2}$

C. $x = 0$

D. $x = \frac{a}{2}$

Answer: C

Watch Video Solution

153. The focal chord of $y^2 = 16x$ is tangent to $(x-6)^2 + y^2 = 2$ then the possible values of the slope of this chord are

A. 1,-1

B. $-\frac{1}{2}, 2$

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

D. $\frac{1}{2}, 1$

Answer: A

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154. Angle between tangents drawn from the point (1,4) to the parabola $y^2 = 4x$ is

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

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

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

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

Answer: C

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155. If $x + y = k$ is normal to $y^2 = 12x$, then k is :

A. 3

B. 9

C. -9

D. -3

Answer: B

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156. The equation of the directix of the parabola $y^2 + 4y + 4x + 2 = 0$ is

A. $x - -1$

B. $x = 1$

C. $x = -\frac{3}{2}$

D. $x = \frac{3}{2}$

Answer: D

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157. The equation of the common tangent to the curves $y^2 = 8x$ and $xy = -1$ is :

A. $3y = 9x + 2$

B. $y = 2x + 1$

C. $2y = x + 8$

D. $y = x + 2$

Answer: D

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158. Focus of the parabola $y^2 = 16x$ is at

A. ± 2

B. $\frac{1}{2}, -2$

C. `-(1)/(2), 2 quad(mathrm

D. 1`

Answer: D

Watch Video Solution

159. A tangent is drawn to the parabola $y = x^2 + 6$ at the point (1,7) which also touches the circle $x^2 + ty^2 + 16x + 12y + c = 0$ at

A. $(-8, -6)$

B. (-7,-6)`

C. (-6,-7)`(mathrm

D. (6,7)`

Answer: C

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160. The equation of the common tangents other than the x -axis to the parabola $y = x^2$ and $y = -(x-2)^2$ is

A. $y = 4(x-1)$

B. $x = 0$

C. $y = -4(x-1)$

D. $y = 4(x+1)$

Answer: A

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161. If $x + y + 1 = 0$ touches the parabola $y^2 = \lambda x$ then $\lambda =$

A. 2

B. 4

C. 6

D. 8

Answer: B

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162. The equation of the chord of parabola $y^2 = 8x$ which is bisected at the point (2,-3) is

A. $4x + 3y + 1 = 0$

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

C. $4x - 3y - 1 = 0$

D. $3x - 4y + 1 = 0$

Answer: A

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163. The focus of the parabola $y^2 - x - 2y + 2 = 0$ is

A. $\left(\frac{1}{4}, 0\right)$

B. (1,2)

C. $\left(\frac{5}{4}, 1\right)$

D. $\left(\frac{3}{4}, \frac{5}{2}\right)$

Answer: C

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164. If a focal chord of the parabola $y^2 = ax$ is $2x - y - 8 = 0$ then the equation of the directrix is

A. $x + 4 = 0$

B. $x - 4 = 0$

C. $y - 4 = 0$

D. $y + 4 = 0$

Answer: A

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165. The line $x + y = 1$ is a tangent to the parabola $y^2 - y + x = 0,$ at

A. (0,1)

B. (1,0)

C. (0,-1)

D. (-1,0)

Answer: A

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166. The equation of the directrix of the parabola $(x-1)^2 = 2(y-2)$ is

A. $2y - 3 = 0$

B. $2x + 1 = 0$

C. $2x - 1 = 0$

D. $2y - 1 = 0$

Answer: A

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167. The equation of the parabola with focus (0,3) and the directrix $y + 3 = 0$ is

A. $x^2 = -12y$

B. $x^2 = 12y$

C. $y^2 = -12y$

D. $y^2 = 12y$

Answer: B

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168. The vertex of the parabola $y^2 = 4(a' - a)(x - a)$ is

A. (a', a)

B. (a, a)

C. $(a, 0)$

D. $(a', 0)$

Answer: C

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169. If the parabola $y^2 - 4ax$ passes through the point (3,2) then the length of its latus rectum is

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

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

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

D. 4

Answer: B

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170. The equation of the normal to the parabola $y^2 = 8x$ having slope 1 is

A. $x + y + 6 = 0$

B. $x - y - 6 = 0$

C. $x - y + 6 = 0$

D. $x + y - 6 = 0$

Answer: B

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171. The point on the parabola $y^2 = 4x$, the normal makes equal angles with the axes is

A. (4,4)

B. (9,6)

C. (4,-4)

D. (1,-2)

Answer: D

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172. The vertex of the parabola $x^2 + 2y = 8x - 7$ is

A. $\left(4, \frac{7}{2}\right)$

B. $\left(4, \frac{9}{2}\right)$

C. $\left(4, \frac{9}{2}\right)$

D. (1,0)

Answer: B

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173. The tangents drawn from the ends of latus rectum of $y^2 = 12x$ meets at

A. directrix

B. vertex

C. focus

D. none of these

Answer: A

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174. The tangent drawn at any point P to the parabola $y^2 = 4ax$ meets the directrix at the point K, then the angle which KP subtends at its focus is

A. 30°

B. 45°

C. 60°

D. 90°

Answer: D

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175. A tangent to the parabola $y^2 = ax$ makes an angle 45° with the x -axis, then its point of contact is

A. $\left(\frac{a}{2}, \frac{a}{2}\right)$

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

C. $\left(\frac{a}{2}, \frac{a}{2}\right)$

D. $\left(\frac{a}{4}, \frac{a}{2}\right)$

Answer: D

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176. The locus of the points which are equidistant from $(-a, 0)$ and $x = a$

A. $y^2 = 4ax$

B. $y^2 = -4ax$

C. $x^2 + 4ay = 0$

D. $x^2 - 4ay = 0$

Answer: B

Watch Video Solution

177. The vertex of the parabola $y^2 = 4a(x + a)$ is

A. (0,0)

B. $(-a, 0)$

C. $(a, 0)$

D. $(0, a)$

Answer: B

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178. If m_1 and m_2 are slopes of the two tangents that are drawn from (2,3) to the parabola $y^2 = 4x$, then $\frac{1}{m_1} + \frac{1}{m_2}$ is

A. 3

B. -3

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

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

Answer: A

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179. The parabola $(y+1)^2 = a(x-2)$ passes through the point $(1, -2)$. The equation of its directrix is

A. $4x + 1 = 0$

B. $4x - 1 = 0$

C. $4x + 9 = 0$

D. $4x - 9 = 0$

Answer: D

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180. Two tangents are drawn from the point (-2,-1) to the parabola $y^2 = 4x$. If α is the angle between these tangents, then $\tan\alpha =$

A. 3

B. $\frac{1}{3}$

C. 2

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

Answer: A

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181. The graph represented by the equations $x = \sin^2 t \, y = 2\cos t$ is

A. a portion of a parabola

B. a parabola

C. a part of a sine graph

D. a part of hyperbola

Answer: B

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182. If PSP' is a focal chord of the parabola $y^2 = 4ax$ and SL is its semi latus rectum then SP, SL, SP' are in

A. 1)AP

B. 2)HP

C. 3)(GP)`

D. 4)none

Answer: B

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183. The tangents at the points $\left(at_1^2, 2at_1\right), \left(at_2^2, 2at_2\right)$ are right angles if

A. $t_1 = t_2$

B. $t_1 = -t_2$

C. $t_1 t_2 = 2$

D. none of these

Answer: B

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184. Axis of the parabola $x^2 - 3y - 6x + 6 = 0$ is

A. $x = -3$

B. $y = -1$

C. $x = 3$

D. $y = 1$

Answer: C

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185. If $x + y + 1 = 0$ touches the parabola $y^2 = \lambda x$ then $\lambda =$

A. -4

B. 4

C. 3

D. -3

Answer: B

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186. The equation of the directrix to the parabola $y^2 - 2x - 6y - 5 = 0$ is

A. $2x + 15 = 0$

B. $x + 5 = 0$

C. $2x + 3 = 0$

D. $x + 2 = 0$

Answer: A

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187. The vertex of the parabola $x^2 + 12x - 9y = 0$ is

A. (6,-4)

B. (-6,4)

C. (6,4)

D. (-6,-4)

Answer: D

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188. The focus of the parabola $y^2 - 4y - 8x + 4 = 0$ is

A. (1,1)

B. (1,2)

C. (2,0)

D. (2,2)

Answer: B

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189. If $2y = 5x + k$ is a tangent to the parabola $y^2 = 6x$ then k =

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

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

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

D. $\frac{6}{5}$

Answer: D

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190. The line $4x + 6y + 9 = 0$ touches the parabola $y^2 = 4x$ at the point

A. $\left(-3, \frac{9}{4}\right)$

B. $\left(3, -\frac{9}{4}\right)$

C. $\left(\frac{9}{4}, -3\right)$

D. $\left(-\frac{9}{4}, -3\right)$

Answer: C

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191. The vertex of the parabola $x^2 + 8x + 12y + 4 = 0$ is

A. (-4,1)

B. (4,-1)

C. (-4,-1)

D. (4,1)

Answer: A

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192. If the normal to the parabola $y^2 = 4x$ at $P(1, 2)$ meets' the parabola again at Q, then Q is

A. (-6,9)

B. (9,-6)

C. (-9,-6)

D. (-6,-9)

Answer: B

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193. The length of the latus rectum of the parabola $y^2 + 8x - 2y + 17 = 0$ is

A. 2

B. 4

C. 8

D. 16

Answer: C

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194. The equation of the parabola with the focus (3,0) and the directrix $x + 3 = 0$ is

A. $y^2 = 3x$

B. $y^2 = 6x$

C. $y^2 = 12x$

D. $y^2 = 2x$

Answer: C

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195. The equation of the parabola with focus (0,0) and directrix $x + y = 4$ is

A. $x^2 + y^2 - 2xy + 8x + 8y - 16 = 0$

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

C. $x^2 + y^2 + 8x + 8y - 16 = 0$

D. $x^2 + y^2 + 8x + 8y - 16 = 0$

Answer: A

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196. The parabola with the directrix $x + 2y - 1 = 0$ and focus (1,0) is

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

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

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

D. $4x^2 - 4xy + y^2 - 8x - 4y + 4 = 0$

Answer: A

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197. The line among the following, that touches the parabola $y^2 = 4ax$ is

A. $x + my + am^2 = 0$

B. $x - my + am^2 = 0$

C. $x + my - am^2 = -0$

D. $y + mx + am^2 = 0$

Answer: B

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198. If a point P moves such that its distance from the point $A(1, 1)$ and the line $x + y + 2$ are equal then the locus is

A. a straight line

B. a pair of lines

C. a parabola

D. an ellipse

Answer: C

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199. Let O be the origin and A be a point on the curve $y^2 = 4x$. Then the locus of the midpoint of OA is

A. $x^2 = 4y$

B. $x^2 = 2y$

C. $y^2 = 16x$

D. $y^2 = 2x$

Answer: D

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200. The length of latus rectum of the parabola $y^2 = 4ax$ whose focal chord PSQ such $SP = 3$ and $SQ = 2$ is given by

A. $\frac{24}{5}$

B. $\frac{12}{5}$

C. $\frac{6}{5}$

D. $\frac{1}{5}$

Answer: A

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201. The equation of a line drawn through the focus of the parabola $y^2 = -4x$ at an angle of 120° to the x-axis is

A. $y + \sqrt{3}(x - 1) = 0$

B. $y - \sqrt{3}(x - 1) = 0$

C. $y + \sqrt{3}(x + 1) = 0$

D. $y - \sqrt{3}(x + 1) = 0$

Answer: C

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202. Let the directrix of a parabola $y^2 = 2ax$ is a tangent to a circle which has its centre coinciding with the focus of the parabola. Then the point of intersection of the parabola and circle is/are

A. $(a, -a)$

B. $\left(\frac{a}{2}, \frac{a}{2}\right)$

C. $\left(\frac{a}{2}, \pm a\right)$

D. $\left(\pm a, \frac{a}{2}\right)$

Answer: C

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203. The equation of the parabola which passes through the intersection of a line $x + y = 0$ and the circle $x^2 + y^2 + 4y = 0$ is

A. $y^2 = 4x$

B. $y^2 = x$

C. $y^2 = 2x$

D. none of these

Answer: C

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204. $y^2 - 2x - 2y + 5 = 0$ is

A. a circle with centre (1,1)

B. a parabola with vertex (1,2)

C. a parabola with directrix $x = \frac{3}{2}$

D. a parabola with directrix $x = -\frac{1}{2}$

Answer: C

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205. The length of the latus rectum of the parabola $x^2 - 4x - 8y + 12 = 0$ is

A. 4

B. 6

C. 8

D. 10

Answer: C

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206. An equation of the tangent to $y^2 = 9x$ which passes through (4,10) is

A. $x + 4y + 1 = 0$

B. $9x + 4y + 4 = 0$

C. $x + 4y + 36 = 0$

D. $9x - 4y + 4 = 0$

Answer: D

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207. The equation of the parabola with its vertex at the origin, axis on the y -axis and passing through (6,-3) is

A. $y^2 = 12x + 6$

B. $x^2 = 12y$

C. $x^2 = -12y$

D. $y^2 = -12x + 6$

Answer: C

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208. The equation of the parabola whose focus is (5,3) and the directrix $3x - 4y + 1 = 0$ is

A. $(4x + 3y)^2 - 256x + 142y + 849 = 0$

B. $(4x + 3y)^2 - 256x - 142y + 849 = 0$

C. $(3x + 4y)^2 - 142x - 256y + 849 - 0$

D. $(3x - 4y)^2 - 256x - 142y + 849 = 0$

Answer: A

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209. The point of the parabola $y^2 = 18x$ for which the ordinate is three times the abscissa is

A. (6,2)

B. (-7,-6)

C. (3,18)

D. (2,6)

Answer: D

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210. The tangents drawn at the extremeties of a focal chord of the parabola $y^2 = 16x$

A. intersect on the line $x + 4 = 0$

B. intersect on $x = 0$

C. intersect at an angle of 45°

D. intersect at an angle of 60°

Answer: A

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211. For the parabola $y^2 = 4x$ the point P whose focal distance is 17 is

A. (2,8) or (2,-8)

B. (16,8) or (16,-8)

C. (8,8) or (8,-8)

D. (4,8) or (4,-8)

Answer: B

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212. The angle between the tangents drawn to the parabola $y^2 = 12x$ from the point (-3,2) is

A. 30°

B. 45°

C. 90°

D. 60°

Answer: C

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213. The tangents drawn at the extremeties of a focal chord of the parabola $y^2 = 16x$

A. $y = -2$

B. $y = 2$

C. $x = -2$

D. $x = 2$

Answer: B

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214. The length of the latus rectum of

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

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

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

C. 2

D. 3

Answer: B

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215. The sum of the reciprocals of focal distances of a focal chord PQ of y^2=4ax is

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

B. a

C. $2a$

D. $\frac{1}{2a}$

Answer: A

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216. The ends of the latus rectum of the parabola $x^2 + 10x - 16y + 25 = 0$ are

A. (3,4),(-13,4)

B. (5,-8),(-5,8)

C. (3,-4),(13,4)

D. (-3,-4),(13,-4)

Answer: A

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217. The length of the latus rectum of the parabola $bx^2 - 4ay + dx + e = 0$

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

B. $4a$

C. $\frac{4d}{b}$

D. $\frac{4a}{b}$

Answer: D

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218. The directrix of the parabola $x^2 - 4x - 8y + 12 = 0$

A. $y = 0$

B. $x - 1$

C. $y = -1$

D. $x = -1$

Answer: A

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219. If the normals at points ' t_1 " and ' t_2 ' to the parabola $y^2 = 4ax$ meet on the parabola, then

A. $t_1 t_2 = -1$

B. $t_2 = -t_1 - \frac{2}{t_1}$

C. $t_1 t_2 = 2$

D. none of these

Answer: C

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220. The equation of a tangent to the parabola $y^2 = 8x$ is y=x+2 the point on this line for which the other tangent to the parabola is perpendicular to the given tangent is

A. (2,4)

B. (-2,0)

C. (-1,1)

D. (0,2)

Answer: B

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221. If two tangents drawn from a point p to the parabola $y^2 = 4x$ are at right angles then the locus of p is

A. $x = -1$

B. $2x - 1 = 0$

C. $x = 1$

D. $2x + 1 = 0$

Answer: A

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222. The equation of the common tangent to the curves $y^2 = 8x$ and $xy = -1$ is :

A. $3y = 9x + 2$

B. $y = 2x + 1$

C. $2y = x + 8$

D. $y = x + 2$

Answer: D

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223. The equation of the common tangents to the parabolas $y = x^2$ and $y = -(x-2)^2$ are

A. $y = 0, y = 4(x-1)$

B. $y = 0, y = -4(x-1)$

C. $y = 0, y = -30x - 50$

D. none of these

Answer: A

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224. Let a and b two distinct points on the parabola $y^2 = 4x$ if the axis fo the parabola touches a circle of raidus r haiving then the slope of the line joining a and b can be

A. $\pm \frac{1}{r}$

B. $\pm \frac{2}{r}$

C. $\pm \frac{3}{r}$

D. $\pm \frac{1}{2r}$

Answer: B

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225. Let (x,y) be any point on the parabla $y^2 = 4x$ let P be the point that divides the line segment from (0,0) to (x,y) in the ratio 1:3 then the locus of p is

A. $x^2 = y$

B. $y^2 = 2x$

C. $y^2 = x$

D. $x^2 = 2y$

Answer: C

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226. If the parabola $y^2 = 4ax$ passes through (3,2) then the length of the latus rectum is

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

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

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

D. 4

Answer: B

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227. If the line $y = mx + c$ is a tangent to the parabola $y^2 = 4a(x + a)$, then $c =$

A. $c = a + \frac{a}{m}$

B. $c = am + \frac{a}{m}$

C. $c = am + a$

D. none of these

Answer: B

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228. If the segment intercepted by the parabola $y^2 = 4ax$ with the line $lx + my + n = 0$ subtends a right angle at the vertex, then

A. $4al + n = 0$

B. $4al + 4am + n = 0$

C. $4am + n = 0$

D. $al + n = 0$

Answer: A

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229. The focus of the parabola $y^2 - 4y - 8x + 4 = 0$ is

A. (1,1)

B. (1,2)

C. (2,1)

D. (2,2)

Answer: D

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230. We are given with two ends of the latus rectum of a parabola then the maximum number of parabolas which can be draw is

A. 1

B. 2

C. 0

D. infinite

Answer: B

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231. The point of intersection of the curves whose parametric equations are

$x = t^2 + 1, y = 2t$ and $x = 2s, y = \frac{2}{s}$ is given by :

A. (1,-3)

B. (2,2)

C. (-2,4)

D. (1,2)

Answer: B

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232. If t is a parameter of one end of a focal chord of the parabola $y^2 = 4ax$ then its length is

A. $a\left(t + \frac{1}{t}\right)^2$

B. $a\left(t - \frac{1}{t}\right)^2$

C. $a\left(t + \frac{1}{t}\right)$

D. $a\left(t - \frac{1}{t}\right)$

Answer: A

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233. The normal to the parabola $y^2 = 8x$ at the point (2,4) meets the parabola again at the point

A. (-18,-12)

B. (-18,12)

C. (18,12)

D. (18,-12)

Answer: D

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