MATHS

BOOKS - DEEPTI MATHS (TELUGU ENGLISH)

PARABOLA

Examples

1. The equation to the parabola having focus (1,2) qbe and directrix x + 2y+5=0 is

A. $4x^2 - 4xy + y^2 - 20x - 40y = 0$

B. $9x^2 - 24xy + 16y^2 - 76x + 18y + 91 = 0$

C. $x^2 + 6xy + 9y^2 28x - 16y + 46 = 0$

D. $x^2 + 4xy + 4y^2 - 50x + 30y + 40 = 0$

Answer: A

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

A. 2

B. 1

C. 8

D. 3

Answer: C

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3. The equation of the directrix of the parabola $x^2 - 4x + 16y + 52 = 0$ is

A. x-2=0

B. y+3=0

C. y-1=0

D. x+2=0

Answer: C

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4. The point of contact of x-y+2=0 to the parabola $y^2 = 8x$ is

A. (2,4)

B. (-2,4)

C. (2,-4)

D. (-2,-4)

Answer: A

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5. The equation of the common tangent to $x^2 + y^2 = 18$ and $y^2 = 24x$ is

A. $y = \pm(x + 3)$

B. $y = \pm(x + 6)$

C. $y = \pm(x + 9)$

D. $y = \pm(x + 2)$

Answer: B

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6. An equilateral is inscribed in the parabola $y^2 = 8x$ with one of its vertices is the vertex of the parabola. Then the length of the side of that triangle is

A. $2\sqrt{3}$

B. $4\sqrt{3}$

C. $8\sqrt{3}$

D. $16\sqrt{3}$

Answer: D

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7. If ((1)/(2),2) is one extermity of a focalchord of the parabola $y^2 = 8x$. Find the co-ordinates of the other extremity.

A. (8,8)

B. (-8,8)

C. (8,-8)

D. (-8,-8)

Answer: C

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8. The line y = 2x-12 is a normal to the parabola y^2 = 4x at the point P whose coordinates are

A. (4,-4)

B. (-2,-2)

C. (3,1)

D. (0,-4)

Answer: A

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9. The length of the chord of the parabola $y^2 = x$ are ends of the chord Mid point (2,1) is

A. 3

B. $\sqrt{14}$

C. $\sqrt{6}$

D. $2\sqrt{5}$

Answer: D

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10. The dimeter of the parabola $y^2 = 6x$ corresponding to the system of parallel chords 3x-y+c-0 is

A. y-1=0

B. y-2=0

C. y+1=0

D. y+2=0

Answer: A

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11. If the tangent at $P(at^2, 2at)$ to the parabola y^2= ax intersects X-axis at A and the normal at P meets it at B then area of triangle PAB is

A. $4a^2|t|\sqrt{1+r^2}$

B. $2a^2|t|(1+r^2)$

C. $4a^2|t|(1+t^2)$

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

Answer: B

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Exercise 1 A

1. The parabola with 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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2. The equation of the parabola with focus (1,-1) and directrix x+y+3=0 is

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

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

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

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

Answer: A

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3. The equation to the parabola having focus $(-1, -1)$ and directrix $2x - 3y + 6 = 0$ is

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

B. $9x^2 + 12xy + 4y^2 + 2x + 62y - 10 = 0$

C. $x^2 + 6xy + 9xy + 9y^2 + 28x - 16y + 46 = 0$

D. $x^2 + 4xy + 4y^2 - 50x + 30y + 40 = 0$

Answer: B

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4. The equation of the parabola whose vertex is origin axis along x-axis and which passes through the point (-2,4) is

A. $y^2 = -8x$

B. $x^2 = 4y$

C. $y^2 = 8x$

D. $y^2 = -12x$

Answer: A

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5. The equation of the parabola whose vertex is origin axis is along y-axis and which passes through the point (2,1) is

A. $y^2 = -8x$

B. $x^2 = 4y$

C. $y^2 = 8x$

D. $y^2 = -12x$

Answer: B

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6. The equation of the parabola whose vertex is (3,-2) axis is parallel to x-axis and latus rectum 4 is

A. $(y+2)^2 = \pm 4(x-3)$

B. $(x+2)^2 = \pm 6(y-1)$

C. $(y-1)^2 = 16(x+2)$

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

Answer: A

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7. The equation of the parabola having focus $(2, 1)$, and vertex $(-2, 1)$ is

A. $(y+2)^2 = \pm 4(x-3)$

B. $(x+2)^2 = \pm 6(y-1)$

C. $(y-1)^2 = 16(x+2)$

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

Answer: C

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8. The equation of the parabola whose vertex is at (0,0) and focus is the point of intersection of x+y=2,2x-y=4 is

A. $y^2 = 2x$

B. $y^2 = 4x$

C. $y^2 = 8x$

D. $x^2 = 8y$

Answer: C

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9. The equation of parabola whose vertex and focus are on x-axis at distances a and a' respectively from the origin is

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

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

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

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

Answer: A

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10. Find the equation of the parabola whose axis is parallel to X-axis and which passes through these points.

(-2,1),(1,2), and (-1,3)

A. $5y^2 + 2x - 21y + 20 = 0$

B. $15y^2 + 12x - 11y + 10 = 0$

C. $18y^2 - 12x + 21y + 56 = 0$

D. $25y^2 - 2x - 65y + 120 = 0$

Answer: A

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11. Find the equation of the parabola whose axis is parallel to Y-axis and which passes through the points (4,5),(-2,11) and (-4,21).

A. $x^2 - 4x - 2y + 10 = 0$

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

C. $x^3 - 4x - 2y + 10 = 0$

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

Answer: A

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12. The equation of parabola whose latus rectum is the line segment joining the points (-3,1) , (1,1) is

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

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

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

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

Answer: A

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13. The equation of the parabola with latusrectum joining the points (6,7) and (6,-1) is

A. $(y-3)^3 = 8(x-4)$

B. $(y+3)^2 = 8(x+4)$

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

D. $y^2 = 4ax$

Answer: B

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14. The vertex of a parabola is the point (a,b) and latusrectum is of length 1. If the axis of the parabola is along the positive direction of y-axis then its equation is

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

B. $(x-a)^2 = \frac{l}{2}(2y-2b)$

C. $(x+a)^2 = \frac{l}{4}(2y-2b)$

D. $(x-a)^2 = \frac{l}{2}(2y-2b)$

Answer: A

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15. The equation of the parabola having the vertex (-1,-2) and whose axis is vertical and which passes through (3,6) is

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

B. $x^2 + 4x + 8y - 13 = 0$

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

D. none

Answer: A

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16. The focus of a parabola is (2,3) and the foot of the perpendicular from the focus to the directrix is (4,5) . The equation to the parabola is .

A. $(x-2)^2+(y-3)^2=(1/2)(x-y+9)^2$

B. $(x-2)^2+(y-3)^2=(1/2)(x+y+9)^2$

C. $(x-2)^2+(y-3)^2=(1/2)(x+y-9)^2$

D. none

Answer: D

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17. The vertex of the parabola $y^2 + 4x - 2y + 3 = 0$ is

A. $(-3, 1)$

B. (-3,1)

C. (-3/2,3)

D. (-1/2,1)

Answer: D

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18. 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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19. 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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20. A parabola has the origin as its focus and the line x=2 as the directrix . Then the vertex of the parabola is at

A. (1,0)

B. $(0, 1)$

C. (2,0)

D. (0,2)

Answer: A

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21. If the focus is (1,-1) and the directrix is the line x+2y-9=0, the vertex of the parabola is

A. (1,2)

B. (2,1)

C. (1,-2)

D. (2,-1)

Answer: B

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22. 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. $xy = \frac{64}{105}$

C. $xy = \frac{105}{64}$

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

Answer: C

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

A. (1/4,0)

B. (1,2)

C. (3/4,0)

D. (5/4,1)

Answer: D

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24. 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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25. The focus of the parabola $x^2 - 2x - 8y - 23 = 0$ is

A. (1,1)

B. (1,-1)

C. (-1,1)

D. (-1,-1)

Answer: B

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26. The distance between the vertex and the focus of the parabola $x^2 - 2x + 3y - 2 = 0$ is

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

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

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

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

Answer: B

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27. The two ends of latusrectum of a parabola are the points (3,6) and (-5,6) . The focus is

A. (1,6)

B. (-1,6)

C. (1,-6)

D. (-1,-6)

Answer: B

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28. If (2,0) is the vertex and y-axis is the directrix of a parabola then its focus is

A. $(-4, 0)$

B. (4,0)

C. (-2,0)

D. (2,0)

Answer: B

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29. 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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30. The length of the latus rectum of the parabola $4y^2 + 12x - 20y + 67 = 0$ is

A. 2

B. 1

C. 8

D. 3

Answer: D

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31. The length of the latus rectum of the parabola $x^2 - 4x + 8y + 28 = 0$ is

A. 16

B. 4

C. 2

D. 8

Answer: D

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32. The length of the latus rectum of the parabola $3x^2 - 9x + 5y - 2 = 0$ is

A. 5

B. 4

C. 16

D. $5/3$

Answer: D

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33. The point (3,4) is the focus and 2x-3y+5=0 is the directrix of a parabola . Its latusrectum is

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

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

C. $\frac{1}{\sqrt{13}}$

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

Answer: A

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34. The length of the latusrectum of the parabola whose focus is $\left(\frac{\mu^2}{2g}\sin 2\alpha, -\frac{\mu^2}{2g}\cos 2\alpha\right)$

A. $\frac{\mu^2}{g}\cos^2\alpha$

B. $\frac{\mu^2}{g}\cos 2\alpha$

C. $\frac{2\mu^2}{g}\cos 2\alpha$

D. $\frac{2\mu^2}{g}\cos^2\alpha$

Answer: D

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35. Latus rectum of the parabola whose axis is parallel to the y-axis and which passes through the points (0,4), (1,9) and (-2,6) is equal to

A. 2

B. 1

C. $1/2$

D. $1/4$

Answer: C

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36. The point (3,4) is the focus and 2x-3y+5=0 is the directrix of a parabola . Its latusrectum is

A. $2/\sqrt{13}$

B. $4/\sqrt{13}$

C. $1/\sqrt{13}$

D. none

Answer: A

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37. If the parabola $y^2 = 4ax$ passes through (-3,2) then the length of its latusrectum is

A. $2/3$

B. $1/3$

C. $4/3$

D. 4

Answer: C

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38. If the straight line y=mx+c is parallel to the axis of the parabola $y^2 = lx$ and intersects the parabola at $\left(\frac{c^2}{8}, c\right)$ then the length of the latus rectum is

A. 2

B. 3

C. 4

D. 8

Answer: D

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39. The ends of the latus rectum of the parabola $(x-2)^2 = -6(y+1)$ are

A. (2,7),(3,-7)

B. (0,5),(0,-5)

C. (0,7),(0,-5)

D. (5,-5/2),(-1,-5/2)

Answer: D

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40. The equation of the latus rectum of the parabola $(y-2)^2 = -4(x+2)$ is

A. y=4

B. x=4

C. x+3=0

D. x+y=0

Answer: C

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41. 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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42. The equation of the directrix of the parabola $y^2 + 4y + 4x + 2 = 0$ is

A. $x = -1$

B. x=1

C. x=-3/2

D. x=3/2

Answer: D

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43. The parabola $(y+1)^2 = a(x-2)$ passes through point (1,-2). The equaiton 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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44. The equation of the directrix of the parabola $y^2 - 4ay - 2ax = 0$ is

A. 2y-13=0

B. 2x+5a=0

C. 2x+25=0

D. 2x-13=0

Answer: B

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45. The equation of the latus rectum of the parabola $x^2 - 12x - 8y + 52 = 0$ is

A. x=4

B. y=4

C. x=6

D. y=2

Answer: B

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46. The equation of the directrix of the parabola $3x^2 - 9x + 5y - 2 = 0$ is

A. 4y+9=0

B. y+4=0

C. y-3=0

D. 6y-13=0

Answer: D

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47. The equation of the directrix of the parabola whose vertex (3,2) and focus (2,-1) is

A. x+3y-19=0

B. y-2y-9=0

C. 2x+6y-24=0

D. x-3y-19=0

Answer: A

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48. The equation of the axis of the parabola $(y+3)^2 = 4(x-2)$ is

A. x-5=0

B. y+3=0

C. 2x-1=0

D. y-1=0

Answer: B

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49. 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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50. The equation of the axis of the parabola $3x^2 - 9x + 5y - 2 = 0$ is

A. x-2=0

B. x-1=0

C. x-3=0

D. 2x-3=0

Answer: D

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51. The parabola y=$px^2 + px + q$ is symmetrical about the line

A. x=q

B. x=p

C. 2x=1

D. 2x+1=0

Answer: D

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52. The focal distance of the point $(9, 6)$ on the parabola $y^2 = 4x$ is

A. 4

B. 8

C. 10

D. 16

Answer: C

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53. The focal distance of the point (4,2) on the parabola $x^2 = 8y$ is

A. 10

B. 4

C. 15

D. 12

Answer: B

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54. the eccentricity of the parabola $y^2 - 2x - 6y + 5 = 0$ is

A. 0

B. 1

C. 1/2

D. 2

Answer: B

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55. If the vertex of the parabola $y = x^2 - 8x + c$ lies on x-axis then the value of c is

A. -16

B. -4

C. 4

D. 16

Answer: D

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56. If the ordinate of a point on the parabola y^2=4x is twic the latus rectum then the point is

A. (16,8)

B. (16,-8)

C. $(-16, 8)$

D. $(-16, -8)$

Answer: A

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57. In the parabola $y^2 - 2y + 8x - 23 = 0$ the length of double ordinate at a distance of 3 from its vertex is

A. $4\sqrt{6}$

B. $2\sqrt{6}$

C. $\sqrt{6}$

D. none

Answer: A

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58. For a parabola the distance between the focus and the directrix is equal to

A. a

B. 4a

C. semilatus

D. none

Answer: C

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59. If (9,12) is one end of a double ordinate of the parabola $y^2 = 16x$ then its equation is

A. x+9=0

B. y+9=0

C. y-9=0

D. x-9=0

Answer: D

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60. The focal distance of a point on the parabola $y^2 = 8x$ whose focal distance is 10.Its coordinates are

A. $(2, \pm 2)$

B. $(3, \pm 3)$

C. $(5, \pm 5)$

D. $(8, \pm 8)$

Answer: D

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61. The coordinates of the parabola $y^2 = 2x$ whose focal distance is 5/2 are

A. $(2, \pm 2)$

B. $(3, \pm 3)$

C. $(5, \pm 5)$

D. $(8, \pm 8)$

Answer: A

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62. The point on the parabola $y^2 = 36x$ whose ordinate is three times its abscissa is

A. (4,12)

B. $(-4, 12)$

C. $(4, -12)$

D. $(-4, -12)$

Answer: A

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63. An equilateral is inscribed in the parabola $y^2 = 8x$ with one of its vertices is the vertex of the parabola. Then the length of the side of that triangle is

A. $24\sqrt{3}$

B. $16\sqrt{3}$

C. $8\sqrt{3}$

D. $4\sqrt{3}$

Answer: B

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64. If Q is the foot of the perpendicular from a point p on the parabola $y^2 = 8(x-3)$ to its directrix. S is an equilateral triangle then find the lengh of side of the triangle.

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

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

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

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

Answer: C

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65. L and L are the ends of the latus rectum of the parabola $x^2 = 6y$. The equation of OL and OL where O is the origin is

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

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

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

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

Answer: B

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66. The coordinates of an endpoint of the latusrectum of the parabola $y^2 = 4ax$ at its vertex is

A. (0,-3)

B. (0,-1)

C. (0,1)

D. (1,3)

Answer: B

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67. The angle subtended by the double ordinate of length 8a of the parabola $y^2 = 4ax$ at its vertex is

A. $\pi / 3$

B. $\pi/4$

C. $\pi/2$

D. $\pi/6$

Answer: C

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68. 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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69. PQ is a double ordinate of the parabola $y^2 + 4x$. The locus of its point of trisection is

A. $9y^2 + 4x = 0$

B. $4y^2 = 9x$

C. $9x^2 + 4y = 0$

D. $9y^2 = 4x$

Answer: D

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70. The ratio in which the line segment joining the points (4,-6) and (3,1) is divided by the parabola $y^2 = 4x$ is

A. $\frac{-20 \pm \sqrt{155}}{11} : 1$

B. $\frac{-2 \pm 2\sqrt{155}}{11} : 1$

C. $-20 \pm 2\sqrt{155} : 11$

D. $-20 \pm \sqrt{155} : 11$

Answer: C

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71. The number of point of intersection of the circle $x^2 + y^2 = 2ax$ with the parabola $y^2 = x$ is

A. 3

B. 1

C. 2

D. 4

Answer: C

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

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

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

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

Answer: A

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73. Which of the following equations represents a parabola

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

B. $\frac{x}{y} - \frac{y}{x} = 0$

C. $\frac{x}{y} + \frac{4}{x} = 0$

D. $(x + y)^2 + 3 = 0$

Answer: C

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74. The equation of the tangent to the parabola $y^2 = 12x$ at (3,-6) is

A. x+y+3=0

B. x+y+1=0

C. x-y+2a=0

D. x+y+1=0

Answer: A

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75. The equation of the tangent to the parabola $x^2 = 4yat(-2, 1)$ is

A. x+y+3=0

B. x+y+1=0

C. x-y+2a=0

D. x+y+1=0

Answer: D

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76. The equation of the tangent to the parabola $y^2 = 4x$ at the end of the latus rectum in the fourth quadrant is

A. $x + y + 3 = 0$

B. $x + y + 1 = 0$

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

D. $x + y - 1 = 0$

Answer: B

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77. The equation of the tangent to the parabola $y^2 = 8x$ inclined at 30° to the x axis is

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

B. $2x - 3y + 14 = 0$

C. $2x - \sqrt{2y} + 7 = 0$

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

Answer: D

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78. The equation to the normal to the parabola $y^2 = 4x$ at (1,2) is

A. x+y-3=0

B. $x - y + 6 = 0$

C. $x - y + 5 = 0$

D. x-y+4=0

Answer: A

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79. The equation of the normal to the curve $x^2 = 4y$ at (1,2) is

A. 2x+y+4=0

B. 2x+y-4=0

C. 2x-y+4=0

D. 2x-y-4=0

Answer: B

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80. The line x+y= 6 is a normal to the parabola $y^2 = 8x$ at the point

A. $(18, -12)$

B. (4,2)

C. (2,4)

D. (3,3)

Answer: C

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81. The equation of the normal at the end of latusrectum in the fourth quadrant of the parabola $y^2 = 4ax$ is

A. x+y+3a=0

B. x+y-3a=0

C. x-y+3a=0

D. x-y-3a=0

Answer: D

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82. The equation of the tangent to the parabola $y^2 = 8x$ and which is parallel to the line x-y+3=0 is

A. x-y+2=0

B. x+y-2=0

C. x-y-2=0

D. 2x-y+4=0

Answer: A

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83. The equation of the tangent to the parabola $y^2 = 16x$ and perpendicular to the line x-4y-7=0 is

A. 4x+y+1=0

B. 4x+y+7=0

C. 4x+y-1=0

D. 4x+y-7=0

Answer: A

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84. If the line x+y+2 =0 touches the parabola $y^2 = kx$ then k=

A. 2

B. 8

C. 1

D. 0

Answer: B

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85. Find the value of k if the line 2y=5x+k is a tangent to the parabola $y^2 = 6x$

A. $2/3$

B. $4/5$

C. $3/5$

D. $6/5$

Answer: D

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86. If x+y+k=0 is a tangent to the parabola $x^2 = 4y$ then k=

A. 1

B. 2

C. -1

D. 4

Answer: A

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87. The straight line x+y touches the parabola $y = x - x^2$ then k =

A. 0

B. -1

C. 1

D. none

Answer: C

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88. 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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89. The line y=$x\sqrt{2}+\lambda$ is a normal to the parabola $y^2=4x$ then λ =

A. $4\sqrt{2}$

B. $-4\sqrt{2}$

C. $2\sqrt{2}$

D. $-2\sqrt{2}$

Answer: B

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90. Let x+y=k be a normal to the parabola $y^2=12x$. If p is the length of the perpendicular from the focus of the parabola onto this normal then 4k-2p^2 =

A. 1

B. 0

C. -1

D. 2

Answer: B

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91. The point of contact of 2x-y+2 =0 to the parabola $y^2 = 4ax$ is

A. (2,4)

B. (3,4)

C. (1,4)

D. (2,1)

Answer: C

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92. The point of contact of x-2y+4a=0 to the parabola $y^2 = 4ax$ is

A. (4a,4a)

B. (a,4a)

C. (3a,4a)

D. (4a,2a)

Answer: A

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

A. $(-3, 9/4)$

B. $(3, -9/4)$

C. $(9/4, -3)$

D. $(-9/4, -3)$

Answer: C

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94. The point on the curve $y^2 = x$ the tangent at which makes an angle of 45° with x-axis will be given by

A. (2,4)

B. (1/2,1/2)

C. (1/2,1/4)

D. (1/4,1/2)

Answer: D

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95. The tangent to $y^2 = ax$ makes an angle 45° with x-axis . Then its point of contact is

A. (a/2,a/4)

B. (-a/2,a/4)

C. (a/4,a/2)

D. (-a/4,a/2)

Answer: C

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96. The condition that the line lx+my+n=0 to touch the parabola $y^2 = 4ax$ is

A. $am^2 = \ln$

B. $an^2 = Im$

C. $a^2m = In$

D. am=ln

Answer: A

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97. The line y =m(x+a) + a/m touch the parabola $y^2 = 4a(x + a)$ for m

A. is equal to 0

B. is any positive real number

C. is any negative number

D. is any real number

Answer: D

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98. The condition that the line y=mx+c to be a tangent to the parabola $y^2 = 4a(x + a)$ is

A. $c = a\left(m + \frac{1}{a}\right)$

B. $c = a\left(m + \frac{1}{m}\right)$

C. $c = a\left(m - \frac{1}{m}\right)$

D. $a = c\left(m + \frac{1}{m}\right)$

Answer: B

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

A. $x + my + am^3 = 0$

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

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

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

Answer: B

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100. The equation of the common tangent to $x^2 + y^2 = 2a^2 \text{and} y^2 = 8ax$ is

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

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

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

D. $y = \pm (x + 4a)$

Answer: B

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101. The equation of the common tangent to $x^2 + y^2 = 8$ and $y^2 = 16x$ is

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

B. $y = \pm (x + 4)$

C. 2x+3y+36=0

D. 3x+2y+24=0

Answer: B

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102. The equation of the common tangent to $y^2 = 8x$ and $x^2 + y^2 - 12x + 4 = 0$ is

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

B. $y = \pm(x + 4)$

C. $2x + 3y + 36 = 0$

D. $3x + 2y + 24 = 0$

Answer: A

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103. The sloope of the line touching both the parabolas $y^2 = 4x$ and $x^2 = 32y$ is

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

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

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

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

Answer: C

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104. The points of intersection of the parabolas $y^2 = 5x$ and $x^2 = 5y$ lie on the line

A. x+y=10

B. x-2y=0

C. x-y=0

D. 2x-y=0

Answer: C

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105. The two parabolas $y^2 = 4x$ and $x^2 = 4y$ intersect at a point P whose abscissae is not zero such that

A. they both touch each other at P

B. they cut at right angles at P

C. the tangents to each curve at P make complementary angles with the x-axis

D. none

Answer: C

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106. If the common tangent of the circle $x^2 + y^2 = c^2$ and the parabola $y^2 = 4ax$ subtends an angle θ with x -axis then $\tan^2\theta$ =

A. $\frac{\sqrt{c^2 + 4a^2} - c}{2c}$

B. $\frac{\sqrt{c^2+4a^2}-c}{2}$

C. $\frac{\sqrt{3c^2+4a^2}-c}{2c}$

D. $\frac{\sqrt{c^2+a^2}+4c}{2c}$

Answer: A

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107. The sum of the slopes of the tangents to the parabola $y^2 = 8x$ drawn from the point (-2,3) is

A. -1

B. -2

C. -3/2

D. 2

Answer: C

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108. The product of the slopes of the tangents to the parabola $y^2 = 4x$ drawn from the point (2,3) is

A. -1

B. -2

C. $-3/2$

D. $1/2$

Answer: D

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109. The slope of tangents drawn from a point (4,10) to the parabola $y^2 = 9x$ are

A. 1/4,3/4

B. 1/4,9/4

C. 1/4,1/3

D. none

Answer: B

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110. The point of intersection of the tangents at the ends of latusrectum of the parabola =4xis

A. (0,0)

B. (0,1)

C. (-1,0)

D. (1,0)

Answer: C

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111. The locus of the point of intersection of perpendicular tangents to the parabola $y^2 = 4ax$ is

A. x=a

B. x+a=0

C. y=a

D. y+a=0

Answer: B

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112. 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: C

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113. The tangents at the ends of a focal chord of a parabola $y^2 = 4ax$ intersect on the directrix at an angle of

A. 30°

B. 45°

C. 60°

D. 90°

Answer: D

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114. The locus of the point of intersectio of the perpendicular tangents to the parabola $x^2 = 4ay$ is

A. y=a

B. y=-a

C. x=a

D. x=-a

Answer: B

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115. The locus of the point of intersection of two tangents to the parabola $y^2 = 4ax$ which make an angle 30° with one another is

A. $(x+a)^2 = 3(y^2 - 4ax)$

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

C. $3(x+a)^2 = y^2 - 4ax$

D. x+a=0

Answer: A

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116. The locus of the point of intersection of two tangents to the parabola $y^2 = 4ax$ which make complementary angles with the axis of the parabola is

A. x=a

B. x+a=0

C. y=a

D. y+a=0

Answer: A

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117. The locus of the point of intersection of two tangents to the parabola $y^2 = 4ax$ which make the angles θ_1 and θ_2 with the axis so that $\tan\theta_1 \tan\theta_2$ =k is

A. kx-y=0

B. kx-a=0

C. y=ka=0

D. x-ka=0

Answer: B

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118. The locus of the point of intersection of two tangents to the parabola $y^2 = 4ax$ which make the angles θ_1 and θ_2 with the axis so that cot $\theta_1 + \cot \theta_2$ = k is

A. kx-y=0

B. kx-a=0

C. y=ka=0

D. x-ka=0

Answer: C

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119. The locus of the point of intersection of two tangents to the parabola $y^2 = 4ax$ which make the angles θ_1 and θ_2 with the axis so that $\tan\theta_1 \tan\theta_2$ =k is

A. kx-y=0

B. kx-a=0

C. y=ka=0

D. $kx^2 + 2ax - y^2 = 0$

Answer: D

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120. The locus of point of intersection of tangents to $y^2 = 4ax$ which includes an angle α is

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

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

C. $y^2 - 4ax = d^2x^2(x + a)^2$

D. none

Answer: A

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121. Two straight lines are perpendicular to each other. One of them touches the parabola $y^2 = 4a(x + a)$, and the

other touches $y^2 = 4b(x + b)$. Then locus of point of intersection of two lines is

A. x+a=0

B. x+b=0

C. x+a+b=0

D. x-a-b=0

Answer: C

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122. The locus of the point of intersection of tangents to the parabola $y^2 = 4(x + 1)$ and $y^2 = 8(x + 2)$ which are perpendicular to each other is

A. x+7=0

B. x-y=4

C. x+3=0

D. y-x=12

Answer: C

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

A. (-1,1)

B. (0,2)

C. (2,4)

D. (-2,0)

Answer: D

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124. Through the vertex O of the parabola $y^2 = 4ax$ a perpendicular is drawn to any tangent meeting it at P and the parabola at Q. Then OP.OQ=

A. a^2

B. $2a^2$

C. $3a^2$

D. $4a^2$

Answer: D

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125. If M is the foot of the perpendicular from a point P on a parabola to its directix and SPM is an equilateral triangle where S is the focus then SP=

A. a

B. 2a

C. 3a

D. 4a

Answer: D

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126. If y_1, y_2 are the ordinates of two points P and Q on the parabola and y_3 is the ordinate of the point of intersection of tangents at P and Q then

A. y_1, y_2, y^3 are in A.P..

B. y_1, y_3, y_2 are in A.P

C. y_1, y_2, y_3 are in G.P

D. y_1, y_3, y_2 are in G.P

Answer: B

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127. The locus of foot of perpendicular from the focus upon any tangent to the parabola $y^2 = 4ax$ is

A. l_1, l_2, l_3 are in G.P

B. l_2, l_1, l_3 are in G.P

C. l_3, l_1, l_2 are in A.P

D. l_3, l_2, l_1 are in A.P

Answer: B

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128. The length of the perpendicular from the focus S of the parabola $y^2 = 4ax$ on the tangent at P is

A. $\sqrt{OS.\ SP}$

B. OS.SP

C. OS+OP

D. none

Answer: A

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129. The number of tangents to $y^2 = 2x$ through (1,2) is

A. 0

B. 1

C. 2

D. 3

Answer: C

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130. The number of tangents to $y^2 = 6x$ through (-1,-1) is

A. 0

B. 1

C. 2

D. 3

Answer: C

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

A. a^2

B. $-3a^2$

C. $5a^2$

D. $-5a^2$

Answer: B

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132. If (x_1, y_1) and (x_2, y_2) are the end points of a focal chord of the parabola $y^2 = 5x$, then $4x_1x_2 + y_1y_2 =$

A. 25

B. 5

C. 0

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

Answer: C

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133. The point of intersection of the tangents at t_1 and t_2 to the parabola $y^2 = 12x$ is

A. $(2t_1, t_2, 2[t_1 - t_2])$

B. $(3t_1, 3[t_1 - t_2])$

C. $(3t_1, t_2, 3[t_1 - t_2])$

D. $(2t_1, t_2, 3[t_1 - t_2])$

Answer: C

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134. The slope of a chord of the parabola $y^2 = 4ax$ which is normal at one end and which subtends a right angle at the origin is

A. $1/\sqrt{2}$

B. $\sqrt{2}$

C. 2

D. none

Answer: B

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135. On the parabola $y^2 = 8x$ if one extremity of a focal chord is $(1/2, -2)$ then its other extremity is

A. (2,2)

B. (1/8,-8)

C. (8,1/8)

D. (8,8)

Answer: D

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136. A focal chord of the parabola $y^2 = 4ax$ meets it at P and Q . If S is the focus then $\frac{1}{SP} + \frac{1}{SQ}$ =

A. a

B. 1/a

C. 2a

D. 2/a

Answer: B

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137. The latusrectum of a parabola whose focal chord is PSQ such that SP =3 and SQ = 2 is given by

A. $24/5$

B. $12/5$

C. $6/5$

D. none

Answer: A

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138. The circle described on any focal chord of a parabola as diameter touches the

A. axes

B. directrix

C. parabola

D. none

Answer: B

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139. The circle on a focal radius as diameter of a parabola $y^2 = 4ax$ touches

A. directrix

B. axis

C. tangent at the vertex

D. none

Answer: C

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140. A circle of radius 4 drawn on a chord of the parabola $y^2 = 8x$ as diameter touches the axis of the parabola. Then the slope of the chord is

A. $1/2$

B. $3/4$

C. 1

D. 2

Answer: C

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141. The slopes of the focal chords of the parabola $y^2 = 32x$ which are tangents to the circle $x^2 + y^2 - 4$ are

A. $\frac{1}{\sqrt{3}}, \frac{-1}{\sqrt{3}}$

B. $\frac{1}{\sqrt{15}}, \frac{-1}{\sqrt{15}}$

C. $\frac{2}{\sqrt{5}}, \frac{-2}{\sqrt{5}}$

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

Answer: B

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142. The locus of the midpoints of the focal chords of the parabola $y^2 = 4ax$ is

A. $4a\sin^2\theta$

B. $4a\cos^2\theta$

C. $4a\cos ec^2\theta$

D. $4a\sec^2\theta$

Answer: C

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143. If a chord of the parabola $y^2 = 4x$ passes through its focus and makes an angle θ with the X-axis then its length is

A. $4\cos^2\theta$

B. $4\sin^2\theta$

C. $4\cos ec^2\theta$

D. $\sec^2\theta$

Answer: C

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144. The length of the chord of the parabola $x^2 = 4ay$ passing through the vertex and having slope $\tan\alpha$ is

A. $4a\cos ec\alpha\cot\alpha$

B. $4a\tan\alpha\sec\alpha$

C. $4a\cos\alpha\cot\alpha$

D. $ta\sin\alpha\tan\alpha$

Answer: B

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145. In the parabola $y^2 = 4ax$ the length of the chord passing through the vertex and inclined to the axis at $\pi/4$

A. $4a\sqrt{2}$

B. $2a\sqrt{2}$

C. $a\sqrt{2}$

D. none

Answer: A

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146. The length of chord intercepted by the parabola $y = x^2 + 3x$ on the line x+y=5 is

A. $3\sqrt{26}$

B. $2\sqrt{26}$

C. $6\sqrt{2}$

D. none

Answer: C

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147. If the line y = mx + a meets the parabola $x^2 = 4ay$ in two points whose abscissa are x_1 and x_2 then $x_1 + x_2$ =0 If

A. m=-1

B. m=1

C. m=2

D. m=$-1/2$

Answer: C

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148. Prove that the portion or the tangent intercepted,between the point of contact and the directrix of the parabola $y^2 = 4ax$ subtends a right angle at its focuc.

A. 30°

B. 45°

C. 60°

D. 90°

Answer: D

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149. The subnormal of the parabola $y^2 = 4ax$ is equal to

A. focus

B. vertex

C. end of the latusrectum

D. none

Answer: A

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150. If a normal chord of a puint on the parabola $y^2 = 4ax$, subtends a right angle at the vertex, then t =

A. 4al +n=0

B. 4al+4am +n=0

C. 4am+n=0

D. al+n=0

Answer: A

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151. If the chord y = mx +c subtends a right angle at the vertex of the parabola $y^2 = 4ax$ then the value of c is

A. $-4am$

B. $4am$

C. $-2am$

D. $2am$

Answer: A

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152. If P is a point on the parabola $y^2 = 8x$ and A is the point (1,0) then the locus of the midpoint of the line segment AP is

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

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

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

D. $y^2 = 2x + 1$

Answer: A

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153. The locus of the point of intersection of two tangents to the parabola $y^2 = 4ax$ which make complementary angles with the axis of the parabola is

A. $\left(y^2 - 4ax\right)\left(y^2 + 4a^2\right) + 4a^2l^2 = 0$

B. $\left(y^2 - 4ax\right)\left(y^2 + 4a^2\right) - 4a^2l^2 = 0$

C. $(y^2 - 4ax)(y^2 - 4a^2) + 4a^2l^2 = 0$

D. $(y^2 - 4ax)(y^2 - 4a^2) - 4a^2l^2 = 0$

Answer: A

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154. The tangents at the points $(at_1^2, 2at_1), (at_2^2, 2at_2)$ on the parabola $y^2 = 4ax$ are al right angles if

A. $t_1 = t_2$

B. $t_1 = -t_2$

C. $t_1t_2 = 2$

D. $t_1t_2 = -1$

Answer: B

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155. The tangent to $y^2 = ax$ makes an angle 45° with x-axis . Then its point of contact is

A. A.P.

B. G.P.

C. H.P.

D. none

Answer: B

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156. The tangents at the points $\left(at_1^2, 2at_1\right), \left(at_2^2, 2at_2\right)$ on the parabola $y^2 = 4ax$ are al right angles if

A. $t_1t_2 = -1$

B. $t_1t_2 = 1$

C. $t_1t_2 = 2$

D. $t_1t_2 = -2$

Answer: A

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157. If P $\left(at_1^2, 2at_1\right)$ and Q $\left(at_2^2, 2at_2\right)$ are two variable points on the curve $y^2 = 4ax$ and PQ subtends a right angle at the vertex then t_1t_2 =

A. -1

B. -2

C. -3

D. -4

Answer: D

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158. The length of the chord of contact of tangents drawn from (x_1, y_1) to the parabola $y^2 = 4ax$ is

A. $\sqrt{\left(v_1^2 - 4ax_1\right)\left(y_1^2 + 4a^2\right)/a}$

B. $\sqrt{\left(y_1^2 - 4ax_1\right)/a}$

C. $\sqrt{\left(y_1^2 + 4ax_1\right)\left(y_1^2 - 4a^2\right)/a}$

D. $\sqrt{\left(y_1^2 - 4ax_1\right)\left(y_1^2 - 4a^2\right)/a}$

Answer: A

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159. The area of the triangle formed by the tangents and chord of contact from (x_1, y_2) to the parabola $y^2 = 4ax$ is

A. $\left(y_1^2 - 4ax_1\right)^{3/2}$

B. $2a\left(y_1^2 - 4ax_1\right)^{3/2}$

C. $\left(y_1^2 - 4ax_1\right)^{3/2}$

D. none

Answer: C

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160. If y_1, y_2 and y_3 are the ordinates of the vertices of a triangle inscribed in the parabola $y^2 = 4ax$ then its area is

A. $\frac{1}{2a}(y_1 - y_2)(y_2 - y_3)(y_3 - y_1)$

B. $\frac{1}{4a}(y_1 - y_2)(y_2 - y_3)(y_3 - y_1)$

C. $\frac{1}{8a}(y_1 - y_2)(y_2 - y_3)(y_3 - y_1)$

D. none

Answer: C

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161. The area of the triangle inscribed in the parabola $y^2 = 4x$ the ordinates of whose vertices are 1,2 and 4 is

A. 7/2 sq.unit

B. 5/2 sq.unit

C. 3/2 sq.unit

D. 3/4 sq.unit

Answer: D

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162. The tangents to the parabola $y^2 = 4ax$ at $P(t_1)$ and $Q(t_2)$ intersect at R. The area of Δ PQR is

A. $\frac{1}{2}a^2(t_1 - t_2)^2$

B. $\frac{1}{2}a^2(t_1 - t_2)$

C. $\frac{1}{2}a^2(t_1 - t_2)^3$

D. none

Answer: C

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163. The orthocentre of the triangle formed by three tangents to the parabola $y^2 = 4ax$ lies on the

A. axis

B. directrix

C. parabola

D. latus rectum

Answer: B

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164. Prove that the orthocentre of the triangle formed by any three tangents to a parabola lies on the directrix of the parabola

A. vertex

B. focus

C. foot of the directrix

D. none

Answer: B

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165. The feet of the perpendiculars drawn from the focus of a parabola to the sides of the triangle formed by its tangents lie on

A. x-axis

B. y-axis

C. directrix

D. tangent at the vertex

Answer: D

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166. If the distances of two points P and Q on the parabola $y^2 = 4ax$ from the focus of a parabola are 4 and 9 respectively then the distance of the point of intersection of tangents at P and Q from the focus is

A. ST

B. 2ST

C. ST^2

D. $2ST^2$

Answer: C

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167. If the distances of two points P and Q on the parabola $y^2 = 4ax$ from the focus of a parabola are 4 and 9 respectively then the distance of the point of intersection of tangents at P and Q from the focus is

A. 8

B. 6

C. 5

D. 13

Answer: B

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168. If the distances of two points P and Q on the parabola $y^2 = 4ax$ from the focus of a parabola are 4 and 9 respectively then the distance of the point of intersection of tangents at P and Q from the focus is

A. $\angle TSP = \angle TSQ$

B. $\angle TSP < \angle TSQ$

C. $\angle TSP > \angle TSQ$

D. none

Answer: A

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169. PSQ is a focal chord of a parabola whose focus is S and vertex A . PA and QA are produced to meet the directrix in R and T respectively . Then $\angle RST$ =

A. 90°

B. 60°

C. 45°

D. 30°

Answer: A

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170. If L,M,N are the three points on the parabola y^2 = 4ax whose ordinates are in G.P then the tangents at L and N

meet on the

A. parabola

B. abscissa of M

C. ordinate of M

D. none

Answer: B

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171. The equation of the normal to the parabola $y^2 = 8x$ at the point t is

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

B. $y + tx = 4t + 2t^3$

C. $x + ty = t + 2t^2$

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

Answer: B

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172. The slope of the normal at $\left(at^2, 2at\right)$ of the parabola $y^2 = 4ax$ is

A. 1/t

B. t

C. $-t$

D. $-1/t$

Answer: C

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173. If the normal at t_1 on the parabola $y^2 = 4ax$ meet it again at t_2 on the curve then $t_1(t_1 + t_2) + 2 =$

A. t

B. $-t - 1/t$

C. $-t - 2/t$

D. none

Answer: C

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174. If the normal at t_1 on the parabola $y^2 = 4ax$ meet it again at t_2 on the curve then $t_1(t_1 + t_2) + 2 =$

A. 0

B. 1

C. t_1

D. t_2

Answer: A

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175. If the normal at (1,2) on the parabola $y^2 = 4x$ meets the parabola again at the point $(t^2, 2t)$ then the value of t is

A. 1

B. 3

C. -3

D. 1

Answer: C

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

A. (-6,9)

B. (9,-6)

C. (-9,-6)

D. (-6,-9)

Answer: B

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177. If the normals at the point t_1 and t_2 on $y^2 = 4ax$ intersect at the point t_3 on the parabola then $t_1 t_2$ =

A. 1

B. 2

C. t_3

D. $2t_3$

Answer: B

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178. The number of normals drawn to the parabola $y^2 = 4x$ from the point (1,0) is

A. 0

B. 1

C. 2

D. 3

Answer: B

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179. The number of normals that can be drawn through (-1,4) to the parabola $y^2 - 4x + 6y = 0$ are

A. 4

B. 3

C. 2

D. 1

Answer: D

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180. From a point (C, 0) three normals are drawn to the parabola $y^2 = x$. Then

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

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

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

D. $\frac{1}{2} > C > \frac{1}{4}$

Answer: C

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181. If the tangents and normals at the extremities of a focal chord of a parabola intersect at (x_1, y_1) and (x_2, y_2) respctively then

A. $x_1 = x_2$

B. $x_1 = y_2$

C. $y_1 = y_2$

D. $x_2 = y_1$

Answer: C

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182. The normals at three points P,Q,R of the parabola $y^2 = 4ax$ meet in (h.k) . The centroid of triangle PQR lies on

A. x=0

B. y=0

C. x=-0

D. y=a

Answer: B

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183. The ordinate of the centroid of the triangle formed by conormal points on the parabola $y^2 = 4ax$ is

A. 4

B. 0

C. 2

D. 1

Answer: B

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184. The normals at two points P and Q of a parabola $y^2 = 4ax$ meet at (x_1, y_1) on the parabola. Then PQ^2 =

A. $(x_1 + 4a)(x_1 + 8a)$

B. $(x_1 + 4a)(x_1 - 8a)$

C. $(x_1 - 4a)(x_1 + 8a)$

D. $(x_1 - 4a)(x_1 - 8a)$

Answer: B

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185. If a normal subtends a right angle at the vertex of a parabola $y^2 = 4ax$ then its length is

A. $\sqrt{5}$ a

B. $3\sqrt{5}a$

C. $6\sqrt{3}$a

D. $7\sqrt{5}a$

Answer: C

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186. If α is the inclination of a tangent to the parabola $y^2 = 4ax$ then the distance be tween the tangent and a parallel normal is

A. a cosec α sec α

B. a cosec $\alpha \sec^2 \alpha$

C. a $\cos ec^2\alpha$ sec α

D. a $\cos ec^2\alpha \sec^2 \alpha$

Answer: D

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187. The length of the normal chord drawn at one end of the latus rectum of $y^2 = 4ax$ is

A. $2\sqrt{2}$ a

B. $4\sqrt{2}$a

C. $8\sqrt{2}a$

D. $10\sqrt{2}$a

Answer: C

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188. The locus of apoint that divides chords of slope 2 of the parabola $y^2 = 4x$ internally in the ratio $1:2$ is a parabola . Then the vertex is

A. (2/9,8/9)

B. (3/7,5/7)

C. $(-2/9, 8/9)$

D. (1/9,4/9)

Answer: A

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189. Let O be the vertex and Q be any point on the parabola , $x^2 = 8y$. If the point P divides the line segment OQ internally in the ratio 1: 3 then the locus of P is:

A. $x^2 = y$

B. $y^2 = x$

C. $y^2 = 2x$

D. $x^2 = 2y$

Answer: D

Watch Video Solution

190. If a normal chord of a puint on the parabola $y^2 = 4ax$, subtends a right angle at the vertex, then t =

A. 4

B. 2

C. 1

D. 3

Answer: B

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191. If a normal subtends a right angle at the vertex of a parabola $y^2 = 4ax$ then its length is

A. $\sqrt{2}$

B. 2

C. $\sqrt{3}$

D. 3

Answer: A

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192. The normal at 'P' cuts the axis of the parabola $y^2 = 4ax$ in G and S is the focus of the parabola. If ΔSPG is equilateral then each side is of length.

A. SP

B. 2SP

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

D. none

Answer: A

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193. The circle passing through three conormal points also passes through

A. vertex

B. foot of the directrix

C. focus

D. none

Answer: A

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194. The normal at 'P' cuts the axis of the parabola $y^2 = 4ax$ in G and S is the focus of the parabola. If ΔSPG is equilateral then each side is of length.

A. a

B. 2a

C. 3a

D. 4a

Answer: D

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195. If the normals at two points on the parabola $y^2 = 4ax$ intersect on the parabola then the product of the abscissac is

A. $4a^2$

B. $-4a^2$

C. 2a

D. $4a^4$

Answer: A

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196. If the normals at two points on the parabola intersects on the curve then the product of the ordinates of the points is

A. 8a

B. $8a^2$

C. $8a^3$

D. $8a^4$

Answer: B

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197. The locus of the point of intersection of perpendicular tangents to the parabola $y^2 = 4ax$ is

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

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

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

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

Answer: A

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198. The three normals from a point to the parabola $y^2 = 4ax$ cut the axes in points whose distance from vertex are in in A.R then the loous of the point is

A. $27ay^2 = 2(x - 2a)^3$

B. $27ay^3 = 2(x - 2a)^2$

C. $9ay^2 = 2(x - 2a)^3$

D. $9ay^3 = 2(x - 2a)^2$

Answer: A

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199. If the normals from any point to the parabola $x^2 = 4y$ cuts the line y=2 in points whose abscissae are in A.P., then the slope of the tangents at the 3 conormal points are in

A. AP

B. GP

C. HP

D. none

Answer: A

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200. If a circle cuts the parabola $y^2 = 4ax$ in four points then the algebraic sum of ordinates of the four points is

A. 0

B. 1

C. -1

D. none

Answer: A

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201. The feet of the normals to $y^2 = 4ax$ from the point (6a,0) are

A. (0,0)

B. (4a,4a)

C. (4a,-4a)

D. (0,0),(4a,4a),(4a,-4a)

Answer: D

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202. If P(-3, 2) is one end of focal chord PQ of the parabola $y^2 + 4x + 4y = 0$ then slope of the normal at Q is

A. $(-1/2)$

B. 2

C. $1/2$

D. -2

Answer: A

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203. The normal at a point P on the parabola $y^2 = 4ax$ cuts the curve again at Q . If M is the midpoint of PQ then the product of the ordinates of P and M is

A. a^2

B. $2a^2$

C. $4a^2$

D. $-4a^2$

Answer: D

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204. The subnormal of the parabola $y^2 = 4ax$ is equal to

A. latus rectum

B. semi latus rectum

C. 2(latus rectum)

D. none

Answer: B

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205. The length of the subnomal to the curve $y^2 = 2px$ is

A. p

B. p/2

C. 2p

D. 4p

Answer: A

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206. If P is a point on the parabola $y^2 = 4ax$ such that the subtangent and subnormal at p are equal then the

coordinates of P are

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

B. $(2a, 2\sqrt{2}a)$

C. $(4a, -4a)$ or $(4a, 4a)$

D. none

Answer: A

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207. If PSP^1 is a focal chord of a parabola $y^2 = 4ax$ and SL is its semi latusrectum then SP SL and SP^1 are in

A. A.P.

B. H.P

C. G.P

D. none of these

Answer: B

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208. An arch is in the shape of a parabola whose axis is vertically downwords and measures 24 mts across its boltom on the ground. Its highest point is 24 mts. The measure of the horizontal beam across its cross section at a height or 18 mts is

A. 50 mt

B. 40 mt

C. 45 mt

D. 55 mt

Answer: B

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209. The points on $y = x^2 + 7x + 2$ which is closest to the line y=3x-3 is

A. (2,8)

B. (2,-8)

C. (-2,8)

D. (-2,-8)

Answer: D

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210. Let P be the point on the parabola $y^2 = 8x$ which is at a minimum distance from the centre C of the circle $x^2 + (y+6)^2$ =1 . Then the equation of the circle passing through C and having its centre at P is

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

B. $x^2 + y^2 - x + 4y - 12 = 0$

C. $x^2 + y^2 - \frac{x}{4} + 2y - 24 = 0$

D. $x^2 + y^2 - 4x + 9y + 18 = 0$

Answer: A

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Exercise 1 B

1. The chord of contact of (2,1) w.r.t the parabola x^2 = y is

A. x+4y+3=0

B. 2x-3y+4=0

C. 3x+2y+4=0

D. 4x-y-1=0

Answer: D

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2. The polar of (-2,3) w.r.t the parabola $y^2 = 4x$ is

A. 2x-3y-4=0

B. 2x-y-2=0

C. 3x-y+4=0

D. 5x-4y+24=0

Answer: A

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3. The polar of (a,0) w.r.t the parabola $y^2 = 4ax$ is

A. x=a

B. x+a=0

C. y=a

D. y+a=0

Answer: B

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4. The pole of the line 2x+3y-4 =0 with respect to the parabola $y^2 = 4x$ is

A. (2,3)

B. (-2,-3)

C. (1,1)

D. (2,-3)

Answer: B

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5. The pole of the straight lien x-2y+4 =0 with respect to the parabola $y^2 = 6x$ is

A. (4,6)

B. (-4,6)

C. (4,-6)

D. (-4,-6)

Answer: A

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6. The pole of the line 3x+4y-4=0 w.r.t parabola $x^2 = 4y$ is

A. (3/2,1)

B. (3/2,-1)

C. (-3/2,1)

D. (-3/2,-1)

Answer: D

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7. The points (3,-2) ,(1,-2) are conjugate w.r.t. the parabola

A. $y^2 = 2x$

B. $y^2 = 4x$

C. $y^2 = 8x$

D. none

Answer: A

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8. The lines 3x+2y-1=0, 2x-y-2 =0 are conjugate w.r.t the parabola

A. $y^2 = 8x$

B. $y^2 = x$

C. $y^2 = 2x$

D. none

Answer: A

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9. If the points (2,4) ,(k,6) are conjugate with respect to the parabola $y^2 = 4x$ then k =

A. 10

B. $7/2$

C. -12

D. -2

Answer: A

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10. If the lines 2x+3y+12 =0 and x-y+k =0 are conjugate with respect to the parabola $y^2 = 8x$ then k=

A. 10

B. $7/2$

C. -12

D. -2

Answer: C

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11. If the lines 2x+3y+12 =0 and x-y+4k=0 are conjugate with respect to the parabola $y^2 = 8x$ then the value of k is

A. -3

B. 3

C. 2

D. -2

Answer: A

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12. The polar of (-a,-2a) w.r.t the circle $x^2 + y^2 - 2ax - 3a^2 = 0$ touches the parabola

A. $y^2 = 4ax$

B. $y^2 = 6ax$

C. $x^2 = 4ax$

D. $y^2 = ax$

Answer: A

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13. The locus of poles of tangents of the parabola $y^2 = 4ax$ w.r.t the parabola $y^2 = 4bx$ is

A. $ax^2 = 4b^2y$

B. $ax = 4b^2y^2$

C. $ay^2 = 4b^2x$

D. none

Answer: C

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14. If the polar of a point P w.r.t the circle $x^2 + y^2 = a^2$ touches the parabola $y^2 = 4ax$ then the locus of P is

A. $y^2 = ax$

B. $y^2 + ax = 0$

C. $y^2 = 2ax$

D. $y^2 + 2ax = 0$

Answer: B

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15. The locus of the midpoints of the focal chords of the parabola $y^2 = 4ax$ is

A. x+a=0

B. x+2a=0

C. x+3a=0

D. x+4a=0

Answer: D

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16. If the polar of a point P w.r.t the circle $x^2 + y^2 = a^2$ touches the parabola $y^2 = 4ax$ then the locus of P is

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

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

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

D. none

Answer: A

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17. The chord of contact of a point P to the parabola $y^2 = 4ax$ touch the circle $x^2 + y^2 = r^2$. The locus of P is

A. $4a^2x^2 = r^2\left(y^2 + 4a^2\right)$

B. $a^2x^2 = 2r^2\left(y^2 - 4a^2\right)$

C. $2a^2x^2 = 2r^2\left(y^2 + 2a^2\right)$

D. $4a^2x^2 = r^2\left(y^2 + 4a^2\right)$

Answer: A

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18. The locus of the point for which the chord of contact w.r.t $y^2 = 4ax$ subtends a right angle at the vertex of the parabola is

A. x+2a=0

B. x+4a=0

C. y+2a=0

D. y+4a=0

Answer: B

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19. The locus of poles of chords of the parabola $y^2 = 4ax$ which are at a constant distance d from the vertex is

A. $d^2x^2 + 4a^2\left(d^2 - y^2\right) = 0$

B. $d^2y^2 + 4a^2\left(d^2 - x^2\right) = 0$

C. $d^2y^2 + 2a^2\left(3d^2 - 2x^2\right) = 0$

D. $x^2 + 2a^2\left(d^2 + 2x^2\right) = 0$

Answer: C

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20. A chord of the parabola y^2 =4ax subtends a right angle at the vertex. The tangents at the extremeties of the chord intersect on

A. x+a=0

B. x+2a=0

C. x+4a=0

D. none

Answer: C

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21. The equation of the chord of the parabola $y^2 = 2x$ having (1,1) as its midpoint is

A. x+y=0

B. x-y=0

C. x-y+1=0

D. 2x-y=0

Answer: B

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22. The midpoint of the chord 2x-y-2=0 of the parabola $y^2 = 8x$ is

A. (1,0)

B. (2,2)

C. (3,4)

D. (0,-2)

Answer: B

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23. The tangent at the point P (x_1, y_1) to the parabola $y^2 = 4ax$ meets the parabola $y^2 = 4a(x + b)$ at Q and R then the midpoint of QR is

A. (2,4)

B. (4,2)

C. (7,9)

D. none

Answer: A

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24. If the tangent at the point P (2,4) to the parabola $y^2 = 8x$ meets the parabola $y^2 = 8x + 5$ at Q and R then the midpoint of QR is

A. (2,4)

B. (4,2)

C. (7,9)

D. none

Answer: A

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25. The locus of the midpoints of the focal chords of the parabola $y^2 = 4ax$ is

A. $y^2 = 8ax$

B. $y^2 = 4ax$

C. $y^2 = 2ax$

D. $y^2 = ax$

Answer: C

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26. 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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27. The locus of the midpoints of the focal chords of the parabola $y^2 = 4ax$ is

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

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

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

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

Answer: B

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28. The locus of the midpoints of the focal chords of the parabola $y^2 = 6x$ which pass through a fixed point (9,5) is

A. $y^2 + 5y + 3x + 27 = 0$

B. $y^2 + 5y - 3x + 27 = 0$

C. $y^2 - 5y - 3x + 27 = 0$

D. $y^2 - 5y - 3x - 27 = 0$

Answer: C

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29. The locus of middle points of normal chords of the parabola $y^2 = 4ax$ is

A. $y(y+k) = 2a(x+h)$

B. $y(y-k) = 2a(x-h)$

C. $y(y-h) = 2a(x+h)$

D. $y(y+k) = 2a(x-h)$

Answer: B

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30. The point of intersection of the tangents of the parabola $y^2 = 16x$ at the extremities of the chord having (3,4) as its midpoint is

A. (1,4)

B. (-1,4)

C. (1,-4)

D. (-1,-4)

Answer: B

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31. The locus of the midpoints of the focal chords of the parabola $y^2 = 4ax$ is

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

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

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

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

Answer: B

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32. A variable tangent to the parabola $y^2 = 4ax$ meets the parabola y^2 +4ax=0 at the points P,Q . The locus of the middle point of PQ is

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

B. $y^2 + 2ax = 0$

C. $y^2 + ax = 0$

D. $3y^2 + 4ax = 0$

Answer: D

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33. A tangent to the parabola $y^2 + 4bx$ =0 meets the parabola $y^2 = 4ax$ in P and Q . The locus of the middle point of PQ is

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

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

C. $y^2(2a + b) = 4ax$

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

Answer: A

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34. The locus of midpoints of chords of the parabola $y^2 = 4ax$ which touch the circle $x^2 + y^2 = a^2$ is

A. $(y^2 - 2ax)^2 = a^2(y^2 + 4a^2)$

B. $(y^2 + 2ax)^2 = a^2(y^2 + 4a^2)$

C. $(y^2 + 2ax)^2 = a^2(y^2 - 4a^2)$

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

Answer: A

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35. The locus of the midpoints of the chords of the parabola $y^2 = 6x$ which touch the circle $x^2 + y^2 + 4x - 12 = 0$ is

A. $(y^2 - 3x - 6)^2 = 16(y^2 + 9)$

B. $(x^2 - 3y - 16)^2 = 16(y^2 + 19)$

C. $8(y^2 - 3x - 6)^2 = 16(y^2 + 9)$

D. $2(y^2 - 3x - 6)^2 = 16(y^2 - 9)$

Answer: A

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36. The locus of midpoints of chords of the parabola $y^2 = 4ax$ which are parallel to line y =mx +c is

A. x=2a

B. x=2a/m

C. y=2a

D. y=2a/m

Answer: D

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37. The tangent at 't' on the parabola $y^2 = 4ax$ is parallel to a normal chord then distance between them is

A. a

B. 2a

C. 4a

D. 8a

Answer: C

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38. An equailateral triangle is inscribed in the parabola $y^2 = 4ax$ whose vertex is at the vertex of the parabola . The length of its side is

A. $2\sqrt{3}$a

B. $4\sqrt{3}$a

C. $8\sqrt{3}$a

D. $16\sqrt{3}$a

Answer: C

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39. The equation to the pair of tangents drawn from (3,-2) to the parabola $y^2 = x$ is

A. $x^2 + 8xy + 12y^2 + 10x + 24y + 9 = 0$

B. $2x^2 + 3xy - 22y^2 + 15x + 4y + 9 = 0$

C. $3x^2 + 18xy + 22y^2 + 50x + 64y + 19 = 0$

D. $x^2 - 8xy - 12y^2 - 10x - 24y + 9 = 0$

Answer: A

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40. The combined equation to the tangents to the parabola $y^2 = 4ax$ from an external point A (x_1, y_1) is

A. $\left(y^2 - 4ax\right)\left(y_1^2 - 4ax_1\right) = \left(yy_1 - 2ax - 2ax_1\right)^2$

B. $y^2 - 4ax = \left(yy_1 - 2ax - 2ax_1\right)^2$

C. $y^2 - 4ax = \left(yy_1 - 2ax\right)^2$

D. none of these

Answer: A

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41. Two tangents are drawn from a point $(-2, -1)$ to the curve $y^2 = 4x$, If α is the angle between them , then $|\tan\alpha|$ is equal to

A. 3

B. $1/3$

C. 1

D. $1/2$

Answer: A

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42. The angle between the tangents to the parabola $y^2 = 4ax$ at the points where it intersects with the line x-y-a= 0 is

A. $\pi/4$

B. $\pi/2$

C. $\pi / 3$

D. $\pi / 6$

Answer: B

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43. The angle between the tangents to the parabola $y^2 = 4ax$ at the points where it intersects with the line x-y-a= 0 is

A. $\pi / 3$

B. $\pi / 4$

C. $\pi / 6$

D. $\pi / 2$

Answer: D

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44. The angle between the tangents drawn from the origin to the parabola $y^2 = 4a(x - a)$ is

A. $\pi / 6$

B. $\pi / 4$

C. $\pi / 3$

D. $\pi / 2$

Answer: D

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45. The slope of tangents drawn from a point (4,10) to the parabola $y^2 = 9x$ are

A. $x - y + 1 = 0, x - 2y + 4 = 0$

B. $x - y - 1 = 0, 2x - y - 4 = 0$

C. $x - 4y + 36 = 0, 9x - 4y + 4 = 0$

D. $x + y + 5 = 0, 2x - 2y - 14 = 0$

Answer: C

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46. Find the angle between tangents drawn from P(2, 3) to the parabola $y^2 = 4x$

A. $x + y + 1 = 0, x + 2y + 4 = 0$

B. $x - y + 1 = 0, x - 2y + 4 = 0$

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

D. $x - y - 1 = 0, 2x - y - 4 = 0$

Answer: D

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47. The locus of middle points of normal chords of the parabola $y^2 = 4ax$ is

A. $\frac{y^2}{2a} + \frac{4a^3}{y^2} - x = 2a$

B. $\frac{y^2}{2a} - \frac{4a^3}{y^2} - x = 2a$

C. $\frac{y^2}{2a} + \frac{4a^3}{y^2} - x + 2a$

D. $\frac{y^2}{2a} - \frac{4a^3}{y^2} - x + 2a$

Answer: A

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48. The locus of the middle points of chords of the parabola which are such that the normals at their extremities meet on the parabola is

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

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

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

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

Answer: A

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49. The locus of middle points of normal chords of the parabola $y^2 = 4ax$ is

A. $(x + 2a)y^2 = 4a^3$

B. $(x + 2a)y^2 + 4a^3 = 0$

C. $(x - 2a)y^2 = 4a^3$

D. $(x - 2a)y^2 + 4a^3 = 0$

Answer: B

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50. The locus of the midpoints of the focal chords of the parabola $y^2 = 4ax$ is

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

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

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

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

Answer: A

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Exercise 2 Special Type Questions Set 1

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

II: The focal distance of the point (9,6) on the parabola $y^2 = 4x$ is 12

A. only I is true

B. only II is true

C. both I and II are true

D. neither I nor II true

Answer: A

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2. For the parabola $y^2 + 6y - 2x + 5$ =0

I) The vertex is (-2,-3) $II)$ The directrix is y +3 =0

Which of the following is correct ?

A. Both I and II are true

B. I is true II is false

C. I is false ,II is true

D. Both I and II are false

Answer: B

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3. I: If the points (2,-1) , (5,k) are conjugate with respect to the parabola $x^2 = 8y$ then k=7

II : If the lines 2x+3y+12=0 , x-y +k=0 are conjugate with respect to the parabola $y^2 = 8x$ then k =-12

A. only I is true

B. only II is true

C. both I and II are true

D. neither I nor II true

Answer: B

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4. I : The locus of the midpoint of chords of the parabola $y^2 = 4ax$ which subtends a right angle at the vetex is $y^2 = 2a(x - 4a)$

II : The locus of midpoint of chords of the parabola $y^2 = 4ax$ which touch the circle $x^2 + y^2 = a^2$ is $(y^2 - 2ax)^2 = a^2(y^2 + 4a^2)$.

A. only I is true

B. only II is true

C. both I and II are true

D. neither I nor II true

Answer: C

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Exercise 2 Special Type Questions Set 2

1. If the equation of the parabola whose axis is parallel to x-axis and passing through (2,-1),(6,1),(3,-2) is $ay^2 + bx + cy + d = 0$ then the ascending order of a,b,c,d is

A. a,b,c,d

B. b,c,a,d

C. c,a,b,d

D. b,a,c,d

Answer: D

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2. The equation of the directrix of the parabola whose vertex (3,2) and focus (2,-1) is

A. a,b,c

B. b,c,a

C. c,a,b

D. b,a,c

Answer: C

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3. If the line ax+by+c=0 touches both the parabolas $y^2 = -32y$ then the ascending order of a,b,c is

A. a,b,c

B. b,c,a

C. c,a,b

D. b,a,c

Answer: D

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4. If the chord of contact of (3,-2) with respect to the parabola $y^2 = x$ is ax+by+c =0 then the ascending order of a,b,c is

A. a,c,b

B. b,c,a

C. c,a,b

D. b,a,c

Answer: B

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Exercise 2 Special Type Questions Set 3

1. Match the following .

Parabola	Focus
I. $y^2 - x - 3y + 2 = 0$	$(a)(1, 2)$
II. $y^2 - 8x - 4y - 4 = 0$	$(b)(-2, 5)$
III. $x^2 + 4x - 8y + 28 = 0$	$(c)(1, -1)$
IV. $x^2 - 2x - 8y - 23 = 0$	$(d)(5/4, 1)$

A. a,b,c,d

B. b,c,a,d

C. d,a,b,c

D. b,d,a,c

Answer: C

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2. Match the following .

Point, parabola	tangent
I. $(3, -6) y^2 = 12x$	$(a) x + y + 1 = 0$
II. $(2, 4) y^2 = 8x$	$(b) x + y + 3 = 0$
III. $(-2, 1) x^2 = 4y$	$(c) x - y + 2 = 0$

A. a,b,c

B. b,c,a

C. c,a,b

D. b,a,c

Answer: B

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3. Match the following

Point, parabola	Polar
I. $(3, -2)y^2 = x$	$(a)5x - 4y + 24 = 0$
II. $(2, 1)x^2 = y$	$(b)2x - 3y - 4 = 0$
III. $(-2, 3)y^2 = 4x$	$(c)4x - y - 1 = 0$
IV. $(5, -6)x^2 = 8y$	$(c)x + 4y + 3 = 0$

A. a,b,c,d

B. b,c,a,d

C. d,c,b,a

D. b,d,a,c

Answer: C

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4. Match the following.

Line, parabola		Pole
I. $2x - 3y + 4 = 0$	$y^2 = 4x$	$(a)(4, 6)$
II. $2x + 3y - 4 = 0$	$y^2 = 4x$	$(b)(2, 3)$
III. $x - 2y + 4 = 0$	$y^2 = 6x$	$(c)(-2, -3)$
IV. $3x + 4y - 4 = 0$	$x^2 = 4y$	$(d)(-3/2, -1)$

A. a,b,c,d

B. b,c,a,d

C. d,c,b,a

D. b,d,a,c

Answer: B

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Exercise 2 Special Type Questions Set 4

1. A: The focus of the parabola $(y-3)^2 = 6(x+3)$ is (-3//2,2) .

R : The focus of the parabola $(y-\beta)^2 = \pm 4a(x-\alpha)$ is $(\alpha \pm a, \beta)$.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: D

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2. A : The condition that the line x/p+y/q=1 to be a tangent to the parabola $y^2 = 4ax$ is ap+q^2 =0.

R: The condition that the line lx+my+n=0 may touch the parabola $y^2 = 4ax$ is am^2 = In

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: A

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3. A : The sum and product of the slopes of the tangents to the parabola $y^2 = 8x$ drawn form the point $(-2, 3)$ are -3/2,-1 .

R : If m_1, m_2 are the slopes of the tangents of the parabola y^2 =4ax through P(x_1, y_1) then $m_1 + m_2 = y_1/x_1, m_1 m_2 = a/x_1$.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: A

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4. Given :A circle $2x^2 + 2y^2 = 5$ and a parabola $y^2 = 4\sqrt{5}x$.

Statement -I : an equation of a common tangent to these

curves is $y = x + \sqrt{5}$.

Statement -II - If the line, $y = mx + \frac{\sqrt{5}}{m}(m \neq 0)$ is their common tangent ,then m satisfies $m^4 - 3m^2 + 2 = 0$

A. Statement -I is true , statement -II is false

B. Statement -I is false , Statement -II is true

C. Statement -I is true , Statement -II is true ,Statement -II is a correct explanation for Statement -I

D. Statement -I is true , Statement -II is true ,Statement -II is not a correct explanation for Statement -I

Answer: D

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