

1. 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) $y^2 - 8x = 32$
2. If the parabola $y^2 = 4ax$ passes through the point (-3, 2), then the length of its latus rectum is
 (a) 2/3 (b) 4/3 (c) 1/3 (d) 4
3. The angle subtended by the double ordinate of length 8a of the parabola $y^2 = 4ax$ is
 (a) $\pi/4$ (b) $\pi/3$ (c) $\pi/2$ (d) None of these
4. Axis of the parabola $x^2 - 3y - 6x + 6 = 0$ is
 (a) $x = -3$ (b) $y = -1$ (c) $x = 3$ (d) $y = 1$
5. If $2x + y + a = 0$ is a focal chord of the parabola $y^2 = -8x$, then $a =$
 (a) 2 (b) -2 (c) 4 (d) -4
6. Equation of the parabola, whose vertex and focus are on the x-axis at a distance a and a' from the origin on positive side, is given by
 (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) None of these
7. Locus of the middle points of all chords of the parabola $y^2 = 4ax$ which are drawn through the vertex is
 (a) $y^2 = 8x$ (b) $y^2 = 2x$ (c) $x^2 + 4y^2 = 16$ (d) $x^2 = 2y$
8. The latus rectum of the ellipse $5x^2 + 9y^2 = 45$ is
 (a) 5/3 (b) 10/3 (c) $2\sqrt{5/3}$ (d) $\sqrt{5/3}$
9. The eccentricity of the curve represented by the equation $x^2 + 2y^2 - 2x + 3y + 2 = 0$ is
 (a) 0 (b) 1/2 (c) $1/\sqrt{2}$ (d) $\sqrt{2}$
10. The eccentricity of the ellipse $9x^2 + 5y^2 - 30y = 0$ is
 (a) 1/3 (b) 2/3
 (c) 3/4 (d) None of these
11. The foci of the ellipse $25(x + 1)^2 + 9(y + 2)^2 = 225$, are at
 (a) (-1, 2) and (-1, -6) (b) (-2, 1) and (-2, 6)
 (c) (-1, -2) and (-2, -1) (d) (-1, -2) and (-1, -6).
12. The sum of the focal distances from any point on the ellipse $9x^2 + 16y^2 = 144$ is
 (a) 32 (b) 18 (c) 16 (d) 8
13. If P(x, y), $F_1(3, 0)$, $F_2(-3, 0)$ and $16x^2 + 25y^2 = 400$, then $PF_1 + PF_2$ equals
 (a) 8 (b) 6 (c) 10 (d) 12

14. The foci of the ellipse $\frac{x^2}{16} + \frac{y^2}{b^2} = 1$ and the hyperbola $\frac{x^2}{144} - \frac{y^2}{81} = \frac{1}{25}$ coincide, then the value of b^2 is
 (a) 1 (b) 5 (c) 7 (d) 9
15. The equation of hyperbola whose focus is the point (2, 1), the directrix is the straight line $2x + 3y - 1 = 0$ and whose eccentricity is $\sqrt{2}$, is
 (a) $5x^2 - 5y^2 + 24xy - 44x - 14y + 63 = 0$ (b) $5x^2 - 5y^2 - 24xy - 44x - 14y + 63 = 0$
 (c) $5x^2 + 5y^2 - 24xy - 44x - 14y + 63 = 0$ (d) $5x^2 + 5y^2 + 24xy + 44x - 14y + 63 = 0$
16. The centre of the hyperbola $2x^2 + y^2 - 3xy - 5x + 4y + 6 = 0$ is the point
 (a) (1, 2) (b) (2, 1) (c) (1, 1) (d) (2, 2)
17. The eccentricity of the hyperbola $9x^2 - 16y^2 + 72x - 32y - 16 = 0$ is
 (a) 5/4 (b) 4/5 (c) 9/16 (d) 16/9
18. If the length of the major axis of an ellipse is three times the length of its minor axis, its eccentricity is
 (a) 1/3 (b) $1/\sqrt{3}$ (c) $1/\sqrt{2}$ (d) $2\sqrt{2}/3$.
19. The length of the latus rectum of an ellipse is 1/3 of the major axis. Its eccentricity is
 (a) 2/3 (b) $\sqrt{2/3}$ (c) $5 \times 4 \times 3/7^3$ (d) $(3/4)^4$
20. A man running round a race course notes that the sum of the distances of two flag-posts from him is always 10 metres and the distance between the flag-posts is 8 metres. The area of the path he encloses in square metres is
 (a) 15π (b) 12π (c) 18π (d) 8π
21. The line $y = mx + 1$ is a tangent to the parabola $y^2 = 4x$, if
 (a) $m = 1$ (b) $m = 2$ (c) $m = 4$ (d) $m = 3$
22. 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) (1/2, 1/4) (b) (1/2, 1/2)] (c) (2, 4) (d) (1/4, 1/2)
23. The line $x - y + 2 = 0$ touches the parabola $y^2 = 8x$ at the point
 (a) (2, -4) (b) (1, $2\sqrt{2}$) (c) (4, $-4\sqrt{2}$) (d) (2, 4)
24. Maximum number of normals that can be drawn to a parabola through a point is
 (a) 1 (b) 2 (c) 3 (d) 4
25. If a tangent to the parabola $y^2 = ax$ makes an angle 45° with x-axis, its point of contact will be
 (a) (a/2, a/4) (b) (-a/2, a/4) (c) (a/4, a/2) (d) (-a/4, a/2)
26. If the straight line $y = 4x + c$ is a tangent to the ellipse $x^2/8 + y^2/4 = 1$, if $a =$
 (a) ± 4 (b) ± 6 (c) ± 1 (d) $\pm \sqrt{132}$

27. The number of values of c such that the straight line $y = 4x + c$ touches the curve $x^2/4 + y^2 = 1$ is
(a) 0 (b) 1 (c) 2 (d) infinite
28. Equation of normal to the parabola $y^2 = 4x$ which is perpendicular to the line $x + 3y + 1 = 0$ is
(a) $3x - y + 33 = 0$ (b) $3x - y - 33 = 0$
(c) $3x - y - 23 = 0$ (d) None of these.
29. Equation of tangent to the ellipse $2x^2 + y^2 = 4$ at the point $(2, 1)$ is
(a) $4x + y = 4$ (b) $x + 4y = 4$ (c) $4x + y = 1$ (d) None of these.
30. The equation of the tangent to the parabola $y^2 = 16x$, which is perpendicular to the line $y = 3x + 7$ is
(a) $y - 3x + 4 = 0$ (b) $3y - x + 36 = 0$
(c) $3y + x - 36 = 0$ (d) $3y + x + 36 = 0$

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