

- The coordinates of the point on the parabola $y^2 = 8x$, where the ordinate is double the abscissa is
 (a) $(-2, -4)$ (b) $(2, 4)$ (c) $(-2, 4)$ (d) $(2, -4)$
- The equation of the parabola with focus at S $(3, 2)$ and with the line $x = -4$ as directrix is
 (a) $y^2 - 6y - 12 + 3 = 0$ (b) $y^2 - 6y - 12x - 3 = 0$
 (c) $y^2 - 6y + 12x + 3 = 0$ (d) $y^2 - 6y + 12x + 3 = 0$
- An arch is in the form of a parabola with its axis vertical. The arch is 10 m high and 5 m wide at the base. How high is it 2 m from the centre.
 (a) 6.3 m (b) 3.6 m (c) 4.4 m (d) none of these
- The equation of the directrix of the parabola $x^2 - 4x - 3y + 10 = 0$ is
 (a) $y = \frac{5}{4}$ (b) $y = -\frac{5}{4}$ (c) $y = -\frac{3}{4}$ (d) $x = \frac{5}{4}$
- The equation of the parabola whose vertex and focus lie on the axis of x at distance a and a_1 from the origin respectively, is
 (a) $y^2 = 4(a_1 - a)x$ (b) $y^2 = 4(a_1 - a)(x - a)$
 (c) $y^2 = 4(a_1 - a)(x - a_1)$ (d) none of these
- If the focus and vertex of a parabola are the points $(0, 2)$ and $(0, 4)$ respectively, then its equation is
 (a) $x^2 + 8y = 32$ (b) $y^2 = -8x + 32$
 (c) $y^2 = 8x + 32$ (d) $x^2 - 8y = 32$
- 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) $y^2 = 8(x + 5)$
- A variable circle is described to pass through $(a, 0)$ and touch the line $x + y = 0$. Let $S = 0$ represent the locus of the centre of the circle. Then $S = 0$ represents
 (a) an ellipse (b) a parabola
 (c) a hyperbola (d) pair of parallel straight lines
- If $(2, 0)$ is the vertex and y-axis the directrix of a parabola then its focus is
 (a) $(4, 0)$ (b) $(-2, 0)$ (c) $(2, 0)$ (d) $(-4, 0)$
- Locus of the middle points of all chords of the parabola $y^2 = 4x$ which are drawn through the vertex is
 (a) $y^2 = 2x$ (b) $y^2 = 8x$ (c) $x^2 + 4y^2 = 16$ (d) $x^2 = 2y$
- The focus of the parabola $y^2 - x - 2y + 2 = 0$ is
 (a) $(1/4, 0)$ (b) $(1, 2)$ (c) $(5/4, 1)$ (d) $(3/4, 1)$
- The curve represented by $x = 3(\cos t + \sin t)$, $y = 4(\cos t - \sin t)$ is
 (a) Ellipse (b) Parabola (c) Hyperbola (d) Circle
- The angle made by a double ordinate of length $8a$ at the vertex of the parabola $y^2 = 4ax$ is
 (a) $\pi/2$ (b) $\pi/3$ (c) $\pi/4$ (d) $\pi/6$
- An equilateral triangle is inscribed in the parabola $y^2 = 4ax$ whose one vertex is at the vertex of the parabola. The length of its side is
 (a) $4a\sqrt{3}$ (b) $8a\sqrt{3}$ (c) $16a\sqrt{3}$ (d) $2a\sqrt{3}$

$$\frac{x^2}{100} - \frac{y^2}{49} = 1 \text{ is}$$

17. The coordinates of a point on the parabola $y^2 = 8x$ whose focal distance is 4, are
 (a) $(1/2, \pm 2)$ (b) $(2, \pm 4)$ (c) $(1, \pm 2\sqrt{2})$ (d) none of these
18. The value of m for which $y = mx + 6$ is a tangent to the hyperbola $\frac{x^2}{100} - \frac{y^2}{49} = 1$
 (a) $\sqrt{17/20}$ (b) $\sqrt{13/20}$ (c) $\sqrt{11/20}$ (d) none of these
19. 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.
20. The locus of the middle points of the focal chord of the parabola $y^2 = 4ax$ is
 (a) $y^2 = 2a(x - a)$ (b) $y^2 = a(x - a)$
 (c) $y^2 = 4a(x - a)$ (d) none of these
21. The length of a focal chord of the parabola $y^2 = 4ax$ making an angle θ with the axis of the parabola is
 (a) $a \operatorname{cosec}^2 \theta$ (b) $4a \sec^2 \theta$ (c) $4a \operatorname{cosec}^2 \theta$ (d) None of these
22. If the tangents at P and Q on a parabola meet in T, then SP, ST and SQ are in
 (a) G.P. (b) A.P. (c) H.P. (d) None of these
23. The point on the curve $y^2 = ax$, the tangent at which makes an angle of 45° with x-axis will be given by
 (a) $\left(\frac{a}{4}, \frac{a}{2}\right)$ (b) $\left(-\frac{a}{2}, \frac{a}{4}\right)$ (c) $\left(\frac{a}{2}, \frac{a}{4}\right)$ (d) $\left(-\frac{a}{4}, \frac{a}{2}\right)$
24. If $2x + y + k = 0$ is a normal to the parabola $y^2 = -8x$, then the value of k is
 (a) -16 (b) -8 (c) 24 (d) -24
25. The equation of the ellipse having vertices at $(\pm 5, 0)$, foci at $(\pm 4, 0)$ is
 (a) $9x^2 - 25y^2 - 225 = 0$ (b) $9x^2 + 25y^2 + 225 = 0$
 (c) $9x^2 + 25y^2 = 225$ (d) None of these
26. The equation of the locus of all points the sum of whose distances from (3, 0) and (9, 0) is 12 is
 (a) $3x^2 + 4y^2 - 36x = 0$ (b) $3x^2 - 4y^2 - 36x = 0$
 (c) $3x^2 + 4y^2 + 36x = 0$ (d) $3x^2 + 36y^2 - 4y = 0$
27. The eccentricity of the ellipse if its latus rectum is equal to one-half of its minor axis is
 (a) $e = \frac{2}{\sqrt{3}}$ (b) $e = \frac{\sqrt{3}}{2}$ (c) $e = \frac{1}{2}$ (d) None of these
28. The latus rectum of the ellipse $5x^2 + 9y^2 = 45$ is
 (a) $10/3$ (b) $5/3$ (c) $2\sqrt{5}/3$ (d) $\sqrt{5}/3$
29. The length of the latus return of an ellipse is $1/3$ of the major axis. Its eccentricity is
 (a) $\sqrt{2/3}$ (b) $(2/3)$ (c) $5 \times 4 \times 3/7^3$ (d) $(3/4)^4$
30. 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) 7 (b) 5 (c) 1 (d) 9