# Ellipse

**1.** For the ellipse $x^2 + 4y^2 = 9$

(a)The eccentricity is $\frac{1}{2}$ (b) The latus rectum is $\frac{2}{3}$ (c) A focus is $(3\sqrt{3}, 0)$ (d) A directrix is $x = 2\sqrt{3}$

**2.** The maximum area of an isosceles triangle inscribed in the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ with the vertex at one end of the major axis is

(a) $\sqrt{3}ab$ (b) $\frac{3\sqrt{3}}{4}ab$ (c) $\frac{5\sqrt{3}}{4}ab$ (d) None of these

**3.** 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) $\sqrt{2}$

**4.** The line $x\cos\alpha + y\sin\alpha = p$ will be a tangent to the conic $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$, if

(a) $p^2 = a^2\sin^2\alpha + b^2\cos^2\alpha$ (b) $p^2 = a^2 + b^2$

(c) $p^2 = b^2\sin^2\alpha + a^2\cos^2\alpha$ (d) None of these

**5.** The radius of the circle passing through the foci of the ellipse $\frac{x^2}{16} + \frac{y^2}{9} = 1$ and having its centre (0, 3) is

(a) 4 (b) 3 (c) $\sqrt{12}$ (d) $\frac{7}{2}$

**6.** The equation $\frac{x^2}{1-r} - \frac{y^2}{1+r} = 1$, $r > 1$ represents

(a) An ellipse (b) A hyperbola (c) A circle (d) An imaginary ellipse

**7.** The radius of the circle having its centre at (0,3) and passing through the foci of the ellipse $\frac{x^2}{16} + \frac{y^2}{9} = 1$, is

(a) 3 (b) 3.5 (c) 4 (d) $\sqrt{12}$

**8.** The locus of a variable point whose distance from $(-2,0)$ is $\frac{2}{3}$ times its distance from the line $x = -\frac{9}{2}$, is

(a) Ellipse (b) Parabola (c) Hyperbola (d) None of these

**9.** If *A* and *B* are two fixed points and *P* is a variable point such that $PA + PB = 4$, where $AB < 4$, then the locus of *P* is

(a) A parabola (b) An ellipse (c) A hyperbola (d) None of these

**10.** Equation of the ellipse whose focus is $(6,7)$ directrix is $x + y + 2 = 0$ and $e = 1/\sqrt{3}$ is

(a) $5x^2 + 2xy + 5y^2 - 76x - 88y + 506 = 0$ (b) $5x^2 - 2xy + 5y^2 - 76x - 88y + 506 = 0$

(c) $5x^2 - 2xy + 5y^2 + 76x + 88y - 506 = 0$ (d) None of these

**11.** The equation of the ellipse whose foci are $(\pm 5, 0)$ and one of its directrix is $5x = 36$, is

(a) $\frac{x^2}{36} + \frac{y^2}{11} = 1$ (b) $\frac{x^2}{6} + \frac{y^2}{\sqrt{11}} = 1$ (c) $\frac{x^2}{6} + \frac{y^2}{11} = 1$ (d) None of these

**12.** The equation of ellipse whose distance between the foci is equal to 8 and distance between the directrix is 18, is

(a) $5x^2 - 9y^2 = 180$ (b) $9x^2 + 5y^2 = 180$ (c) $x^2 + 9y^2 = 180$ (d) $5x^2 + 9y^2 = 180$

**13.** The equation of the ellipse whose one of the vertices is $(0,7)$ and the corresponding directrix is $y = 12$, is

(a) $95x^2 + 144y^2 = 4655$ (b) $144x^2 + 95y^2 = 4655$ (c) $95x^2 + 144y^2 = 13680$ (d) None of these

**14.** Equations $x = a\cos\theta,\ y = b\sin\theta\ (a > b)$ represent a conic section whose eccentricity *e* is given by

(a) $e^2 = \frac{a^2 + b^2}{a^2}$ (b) $e^2 = \frac{a^2 + b^2}{b^2}$ (c) $e^2 = \frac{a^2 - b^2}{a^2}$ (d) $e^2 = \frac{a^2 - b^2}{b^2}$

**15.** The curve with parametric equations $x = 1 + 4\cos\theta,\ y = 2 + 3\sin\theta$ is

(a) An ellipse (b) A parabola (c) A hyperbola (d) A circle