DPP
DAILY PRACTICE PROBLEMS

CLASS : XIth
DATE :

Solutions

SUBJECT : MATHS
DPP NO. : 9

Topic :- CONIC SECTION

1. If $(1, a)$, $(b, 2)$ are conjugate points with respect to the circle $x^2 + y^2 = 25$, then $4a + 2b$ is equal to
   a) 25 b) 50 c) 100 d) 150

2. The equation $(10x - 5)^2 + (10y - 4)^2 = (3x + 4y - 1)^2$ represents
   a) A circle
   b) A pair of straight lines
   c) An ellipse
   d) A parabola

3. The difference in focal distances of any point on the hyperbola $\frac{x^2}{16} - \frac{y^2}{9} = 1$ is
   a) 8 b) 9 c) 0 d) 6

4. The chord of contact of tangents drawn from any point on $x - 1 = 0$ to $y^2 - 6y + 4x + 9 = 0$ passes through the point
   a) $(-1,3)$ b) $(1,-3)$ c) $(3,-1)$ d) $(3,1)$

5. The equation of the circle passing through $(4, 5)$ and having the centre $(2, 2)$, is
   a) $x^2 + y^2 + 4x + 4y - 5 = 0$
   b) $x^2 + y^2 - 4x - 4y - 5 = 0$
   c) $x^2 + y^2 - 4x = 13$
   d) $x^2 + y^2 - 4x - 4y + 5 = 0$

6. The product of lengths of perpendicular from any point on the hyperbola $x^2 - y^2 = 8$ to its asymptotes is
   a) 8 b) 6 c) 2 d) 4

7. The foci of an ellipse are $(0, \pm 4)$ and the equations for the directrices are $y = \pm 9$. The equation for the ellipse is
   a) $5x^2 + 9y^2 = 4$ b) $2x^2 - 6y^2 = 28$ c) $6x^2 + 3y^2 = 45$ d) $9x^2 + 5y^2 = 180$

8. Tangents at any points on the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ cut the axes at A and B respectively. If the rectangle $OAPB$, where O is the origin is completed, then locus of point P is given by
   a) $\frac{a^2}{x^2} - \frac{b^2}{y^2} = 1$ b) $\frac{a^2}{x^2} + \frac{b^2}{y^2} = 1$ c) $\frac{a^2}{y^2} - \frac{b^2}{x^2} = 1$ d) None of these

9. Let P be the point $(1,0)$ and Q a point on the locus of $y^2 = 8x$, 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) $y^2 - 4x + 2 = 0$

10. The equation $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$ represents an ellipse if

a) $\Delta = 0, h^2 < ab$ b) $\Delta \neq 0, h^2 < ab$ c) $\Delta \neq 0, h^2 > ab$ d) $\Delta \neq 0, h^2 = ab$

11. If the lengths of major and semi-minor axes of an ellipse are 4 and $\sqrt{3}$ and their corresponding equations are $y - 5 = 0$ and $x + 3 = 0$, then the equation of the ellipse is

a) $3x^2 + 4y^2 + 18x - 40y + 115 = 0$

b) $4x^2 - 3y^2 - 24x + 30y + 99 = 0$

c) $3x^2 - 4y^2 - 18x + 40y + 115 = 0$

d) $4x^2 + 3y^2 + 24x - 30y + 99 = 0$

12. The pole of the straight line $9x + y - 28 = 0$ with respect to the circle $2x^2 + 2y^2 - 3x + 5y - 7 = 0$ is

a) $(3,1)$ b) $(1,3)$ c) $(3, -1)$ d) $(-3,1)$

13. The locus of middle points of chords of hyperbola $3x^2 - 2y^2 + 4x - 6y = 0$ parallel to $y = 2x$ is

a) $3x - 4y = 4$ b) $3y - 4x + 4 = 0$ c) $4x - 3y = 3$ d) $3x - 4y = 2$

14. If the circle $x^2 + y^2 - 10x - 14y + 24 = 0$ cuts an intercepts on y-axis of length

a) 5 b) 10 c) 1 d) None of these

15. The locus of a point $P(\alpha,\beta)$ moving under the condition that the line $y = \alpha x + \beta$ is a tangent to the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$, is

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

16. 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 of the above

17. A variable tangent to the parabola $y^2 = 4ax$ meets the parabola $y^2 = -4ax$ at P and Q. The locus of the mid-point of PQ is

a) $y^2 = -2ax$ b) $y^2 = -ax$ c) $y^2 - \frac{4}{3}ax$ d) $y^2 = -4ax$

18. P is a point on the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$, N is the foot of the perpendicular from P on the transverse axis. The tangent to the hyperbola at P meets the transverse axis at T. If O is the centre of the hyperbola, then $OT \cdot ON$ is equal to

a) e^2 b) a^2 c) b^2 d) b^2/a^2

19. If the eccentricity of the hyperbola $x^2 - y^2\sec^2\theta = 4$ *is* $\sqrt{3}$ times the eccentricity of the ellipse $x^2\sec^2\theta + y^2 = 16$, then the value of θ equals

a) $\frac{\pi}{6}$ b) $\frac{3\pi}{4}$ c) $\frac{\pi}{3}$ d) $\frac{\pi}{2}$

20. If two circles of the same radius r and centres at (2, 3) and (5, 6) respectively cut orthogonally, then the value of r is

a) 3 b) 2 c) 1 d) 5