DPP
DAILY PRACTICE PROBLEMS

CLASS : XIth
DATE :

Solutions

SUBJECT : MATHS
DPP NO. : 5

Topic :- CONIC SECTION

1. The angle between the tangents drawn from the origin to the parabola $y^2 = 4\,a(x-a)$, is
   a) $90°$ b) $30°$ c) $\tan^{-1}(1/2)$ d) $45°$

2. If for the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$, y-axis is the minor axis and the length of the latusrectum is one half of the length of its minor axis, then its eccentricity is
   a) $\frac{1}{\sqrt{2}}$ b) $\frac{1}{2}$ c) $\frac{\sqrt{3}}{2}$ d) $\frac{3}{4}$

3. The coordinates of the centre of the circle which intersects circles $x^2+y^2+4x+7=0$, $2x^2+2y^2+3x+5y+9=0$ and $x^2+y^2+y=0$ orthogonally are
   a) $(-2,1)$ b) $(-2,-1)$ c) $(2,-1)$ d) $(2,1)$

4. Equation $ax^2+2hxy+by^2+2gx+2fy+c=0$ $(abc+2fgh-af^2-bg^2-ch^2\neq 0)$ represents a parabola, if
   a) $h^2=ab$ b) $h^2>ab$ c) $h^2<ab$ d) None of these

5. The ellipse $\frac{x^2}{25}+\frac{y^2}{16}=1$ and the hyperbola $\frac{x^2}{25}-\frac{y^2}{16}=1$ have in common
   a) centre only
   b) Centre, foci and directrices
   c) Centre, foci and vertices
   d) Centre and vertices only

6. The eccentricity of the hyperbola $\frac{x^2}{16}-\frac{y^2}{25}=1$ is
   a) $\frac{3}{4}$ b) $\frac{3}{5}$ c) $\frac{\sqrt{41}}{4}$ d) $\frac{\sqrt{41}}{5}$

7. One equation of common tangent to ellipse $\frac{x^2}{a^2}-\frac{y^2}{b^2}=1$ and hyperbola $\frac{x^2}{a^2}-\frac{y^2}{b^2}=2$ is
   a) $2y=\sqrt{3}bx+ab$
   b) $y=2\sqrt{3}\frac{b}{a}x+2b$
   c) No common tangent
   d) $ay=\sqrt{3}bx+2ab$

8. If $lx+my+n=0$ is a tangent to the rectangular hyperbola $xy=c^2$, then
   a) $l<m<0$ b) $l>0, m<0$ c) $l<0, m>0$ d) None of these

9. The normals at three points P,Q,R of the parabola $y^2=4\,ax$ meet in (h,k). The centroid of triangle PQR lies on
   a) $x=0$ b) $y=0$ c) $x=-a$ d) $y=a$

10. If the point $P(4,-2)$ is the one end of the focal chord PQ of the parabola $y^2 = x$, then the slope of the tangent at Q is

a) $-1/4$ b) $1/4$ c) 4 d) -4

11. Equation of normal to the parabola $y^2 = 4x$ which passes through $(3,0)$ is

a) $x + y = 3$ b) $x + y + 3 = 0$ c) $x - 2y = 3$ d) None of these

12. Let C be the centre of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$. If the tangent at any point on the ellipse cuts the coordinate axes in P and Q respectively, then $\frac{a^2}{CP^2} + \frac{b^2}{CQ^2} =$

a) 1 b) 2 c) 3 d) 4

13. The equation of the circle having $x - y - 2 = 0$ and $x - y + 2 = 0$ as two tangents and $x - y = 0$ as a diameter is

a) $x^2 + y^2 + 2x - 2y + 1 = 0$ b) $x^2 + y^2 - 2x + 2y - 1 = 0$
c) $x^2 + y^2 = 2$ d) $x^2 + y^2 = 1$

14. If $(-3, 2)$ lies on the circle $x^2 + y^2 + 2gx + 2fy + c = 0$ which is concentric with the circle $x^2 + y^2 + 6x + 8y - 5 = 0$, then c is equal to

a) 11 b) -11 c) 24 d) 100

15. The equation of the circumcircle of the triangle formed by the lines $x = 0$, $y = 0$, $2x + 3y = 5$ is

a) $6(x^2 + y^2) + 5(3x - 2y) = 0$ b) $x^2 + y^2 - 2x - 3y + 5 = 0$
c) $x^2 + y^2 + 2x - 3y - 5 = 0$ d) $6(x^2 + y^2) - 5(3x + 2y) = 0$

16. Circles are drawn through the point $(2,0)$ to cut intercepts of length 5 units on the x-axis. If their centres lie in the first quadrant, then their equation is

a) $x^2 + y^2 - 9x + 2ky + 14 = 0$
b) $3x^2 + 3y^2 + 27x - 2ky + 42 = 0$
c) $x^2 + y^2 - 9x - 2ky + 14 = 0$
d) $x^2 + y^2 - 2kx - 9y + 14 = 0$

17. The number of points with integral coordinates with lie in the interior of the region common to the circle $x^2 + y^2 = 16$ and the parabola $y^2 = 4x$ is

a) 8 b) 10 c) 16 d) None of these

18. If the chords of contact of the tangents from a point on the circle $x^2 + y^2 = a^2$ to the circle $x^2 + y^2 = b^2$ touch the circle $x^2 + y^2 = c^2$, then the roots of the equation $ax^2 + 2bx + c = 0$, are

a) Imaginary b) Real and equal c) Real and unequal d) Rational

19. If the vertex and focus of a parabola are $(3,3)$ and $(-3,3)$ respectively, then its equation is

a) $x^2 + 6x - 24y + 63 = 0$
b) $x^2 - 6x + 24y - 63 = 0$
c) $y^2 - 6y + 24x - 63 = 0$

d) $y^2 + 6y - 24x + 63 = 0$

20. If the length of the major axis of an ellipse is three times the length of its minor axis, its eccentricity, is

a) $\frac{1}{3}$ b) $\frac{1}{\sqrt{3}}$ c) $\frac{1}{\sqrt{2}}$ d) $\frac{2\sqrt{2}}{3}$