DPP
DAILY PRACTICE PROBLEMS

CLASS : XIth
DATE :

Solutions

SUBJECT : MATHS
DPP NO. : 6

Topic :- CONIC SECTION

1. The number of integral values of $'a'$ for which the radius of the circle $x^2 + y^2 + ax + (1 - a)$ $y + 5 = 0$ cannot exceed 5, is

a) 14 b) 18 c) 16 d) None of these

2. The number of common tangents to the circles $x^2 + y^2 - 2x - 4y + 1 = 0$ and $x^2 + y^2 - 12x - 16y + 91 = 0$, is

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

3. If two tangents drawn from a point P to the parabola $y^2 = 4x$ are at right angles, then the locus of P is

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

4. A point P moves in such a way that the ratio of its distance from two coplanar points is always a fixed number$(\neq 1)$. Then, its locus is a

a) Parabola b) Circle
c) Hyperbola d) Pair of straight lines

5. Two circles, each of radius 5, have a common tangent at (1,1) whose equation is $3x + 4y - 7 = 0$. Then their centres are

a) $(4, -5), (-2,3)$ b) $(4, -3), (-2,5)$ c) $(4,5), (-2, -3)$ d) None of these

6. The tangent at (1, 7) to the curve $x^2 = y - 6$ touches the circle $x^2 + y^2 + 16x + 12y + c = 0$ at

a) (6, 7) b) $(-6, 7)$ c) $(6, -7)$ d) $(-6, -7)$

7. If the latusrectum subtends a right angle at the centre of the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$, then its eccentricity is

a) $\frac{\sqrt{13}}{2}$ b) $\frac{\sqrt{5}-1}{2}$ c) $\frac{\sqrt{5}+1}{2}$ d) $\frac{\sqrt{3}+1}{2}$

8. If e_1 is the eccentricity of the ellipse $\frac{x^2}{16} + \frac{y^2}{7} = 1$ and e_2 is the eccentricity of the hyperbola $\frac{x^2}{9} - \frac{y^2}{7} = 1$, then $e_1 + e_2$ is equal to

a) $\frac{16}{7}$ b) $\frac{25}{4}$ c) $\frac{25}{12}$ d) $\frac{16}{9}$

9. If $y = mx - \frac{(a^2 - b^2)m}{\sqrt{a^2 + b^2m^2}}$ is normal to the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ for all values of m belonging to

a) $(0, 1)$ b) $(0,\infty)$ c) R d) None of these

10. The area of the quadrilateral formed by the tangents at the end points of latus rectum to the ellipse $\frac{x^2}{9} + \frac{y^2}{5} = 1$is

a) $27/4$ sq units b) 9 sq units c) $27/2$ sq units d) 27 sq units

11. If the tangent at any point P on the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ meets the lines $bx - ay = 0$ and $bx + ay = 0$ in the points Q and R, then $CQ \cdot CR =$

a) a^2b^2 b) $a^2 - b^2$ c) $a^2 + b^2$ d) None of these

12. From a point T a tangent is drawn at the point $P(16,16)$ of the parabola $y^2 = 16\,x$. If S be the focus of the parabola, then $\angle TPS$ can be equal to

a) $\tan^{-1}(3/4)$ b) $\frac{1}{2}\tan^{-1}(1/2)$ c) $\tan^{-1}(1/2)$ d) $\pi/4$

13. The number of common tangents to two circles $x^2 + y^2 = 4$ and $x^2 + y^2 - 8x + 12 = 0$ is

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

14. The circle $x^2 + y^2 + 2gx + 2fy + c = 0$ cuts the parabola $x^2 = 4ay$ at points (x_i,y_i), $i = 1, 2, 3, 4$, then

a) $\sum y_i = 0$ b) $\sum y_i = -4(f + 2a)$ c) $\sum x_i = -4(g + 2a)$ d) $\sum x_i = -2(g + 2a)$

15. A straight rod of length 9 units with its ends A,B always on x and y axes respectively. then, the locus of the centroid of $\Delta\, OAB$, is

a) $x^2 + y^2 = 3$ b) $x^2 + y^2 = 9$ c) $x^2 + y^2 = 1$ d) $x^2 + y^2 = 81$

16. If a focal chord of the parabola $y^2 = ax$ is $2x - y - 8 = 0$, then the equation of the directrix is

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

17. The locus of the point of intersection of the tangents to the circle $x = r\cos\theta, y = r\sin\theta$ at points whose parametric angles differ by a right angle is

a) $x^2 + y^2 = \frac{r^2}{2}$ b) $x^2 + y^2 = 2\,r^2$ c) $x^2 + y^2 = 4\,r^2$ d) None of these

18. If $P(1,3)$ and $Q(1,1)$ are two points on the parabola $y^2 = 4x$ such that a point dividing PQ internally in the ratio $1:\lambda$ is an interior point of the parabola, then λ lies in the interval

a) $(0,1)$ b) $(-3/5,1)$ c) $(1/2,3/5)$ d) None of these

19. The value of c, for which the line $y = 2x + c$ is a tangent to the circle $x^2 + y^2 = 16$, is

a) $-16\sqrt{5}$ b) $4\sqrt{5}$ c) $16\sqrt{5}$ d) 20

20. How many common tangents can be drawn to the following circles $x^2 + y^2 = 6x$ and $x^2 + y^2 + 6x + 2y + 1 = 0$?

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