Chapter - 11

ASSIGNMENT

CIRCLES

1. Find the area of the circle whose centre is at (1, 2) and which passes through the point (4, 6)
   Find the equation of the circle which touches both the axes and whose radius is a.
2. The lines $2x - 3y = 5$ and $3x - 4y = 7$ are the diameters of a circle of area 154 square units .Find the equation of the circle.
3. Find the equation of the circle which touches x-axis and whose centre is (1, 2).
4. If the radius of the circle $x^2 + y^2 - 18x + 12y + k = 0$ be 11, then Find k.
5. Find the equation of the circle concentric with the circle $x^2 + y^2 + 8x + 10y - 7 = 0$ and passing through the centre of the circle $x^2 + y^2 - 4x - 6y = 0$.
6. Find the equation of the circle concentric with the circle $x^2 + y^2 - 4x - 6y - 3 = 0$ and touching y-axis.
7. If (x, 3) and (3, 5) are the extremities of a diameter of a circle with centre at $(2, y)$, then Find the the value of x and y.
8. Find the area of the circle in which a chord of length $\sqrt{2}$ makes an angle $\frac{®}{2}$ at the centre.
9. Check weather the point (1, 1) lies inside,outside or on the circle $x^2 + y^2 - x + y - 1 = 0$.
10. the equation of the circle with origin as centre passing the vertices of an equilateral triangle whose median is of length 3a.
11. A circle is inscribed in an equilateral triangle of side a, Find the area of any square inscribed in the circle.

PARABOLA

12. If the vertex of a parabola be at origin and directrix be $x + 5 = 0$, then find its latus rectum.
13. If (2, 0) is the vertex and y-axis the directrix of a parabola, then find its focus.
14. Find the ends of latus rectum of parabola $x^2 + 8y = 0$.
15. Find the equation of the lines joining the vertex of the parabola $y^2 = 6x$ to the points on it whose abscissa is 24.
16. Find the co-ordinates of the extremities of the latus rectum of the parabola $5y^2 = 4x$.
17. A parabola passing through the point $(-4, -2)$ has its vertex at the origin and y-axis as its axis. Find the latus rectum of the parabola.
18. An equilateral triangle is inscribed in the parabola $y^2 = 4ax$ whose vertices are at the parabola, then Find the length of its side.
19. Find the area of the triangle formed by the lines joining the vertex of the parabola $x^2 = 12y$ to the ends of its latus rectum.

ELLIPSE

20. If the latus rectum of an ellipse be equal to half of its minor axis, then find its eccentricity.
21. Find the equation of the ellipse whose centre is at origin and which passes through the points (–3, 1) and (2, –2).

22. If the eccentricity of an ellipse be 5/8 and the distance between its foci be 10, then find its latus rectum.

23. The eccentricity of an ellipse is 2/3, latus rectum is 5 and centre is (0, 0). Find the equation of the ellipse.

24. The centre, one of the foci and semi-major axis of an ellipse be (0, 0), (0, 3) and 5 then find its equation.

25. Find the eccentricity of the ellipse whose latus rectum is equal to the distance between two focus points.

26. The equation $\frac{x^2}{2-r}+\frac{y^2}{r-5}+1=0$ represents an ellipse then find r.

27. If $P\equiv(x,y)$, $F_1\equiv(3,0)$, $F_2\equiv(-3,0)$ and $16x^2+25y^2=400$, then find PF_1+PF_2.

28. If the eccentricity of the two ellipse $\frac{x^2}{169}+\frac{y^2}{25}=1$ and $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ are equal, then find value of a/b.

HYPERBOLA

29. If the eccentricities of the hyperbolas $\frac{x^2}{a^2}-\frac{y^2}{b^2}=1$ and $\frac{y^2}{b^2}-\frac{x^2}{a^2}=1$ be e and e_1, then find $\frac{1}{e^2}+\frac{1}{e_1^2}$.

30. If P is a point on the hyperbola $16x^2-9y^2=144$ whose foci are S_1 and S_2, then Find $PS_1 \sim PS_2$.

31. The length of the transverse axis of a hyperbola is 7 and it passes through the point (5, –2). The Find the equation of the hyperbola.

32. If (4, 0) and (–4, 0) be the vertices and (6, 0) and (–6, 0) be the foci of a hyperbola, then Find its eccentricity.

33. Find the eccentricity of the hyperbola $x^2-y^2=25$.