

Board – CBSE

Class – 11

Topic – Conic Sections

### Very Short Answer Type Question (1 Mark)

1. Find the centre and radius of the circle  $3x^2 + 3y^2 + 6x - 4y - 1 = 0$
2. Does  $2x^2 + 2y^2 + 3x + 10 = 0$  represent the equation of a circle? Justify.
3. Find equation of circle whose end points of one of its diameter are  $(-2, 3)$  and  $(0, -1)$ .
4. Find the value(s) of  $p$  so that the equation  $x^2 + y^2 + 2px + 4y - 12 = 0$  may represent a circle of radius 5 units.
5. If parabola  $y^2 = px$  passes through point  $(2, -3)$ , find the length of latus rectum.
6. Find the coordinates of focus, and length of latus rectum of parabola  $3y^2 = 8x$ .
7. Find the eccentricity of the ellipse  $\frac{x^2}{25} + \frac{y^2}{9} = 1$

### Short Answer Type Question (4 Mark)

8. One end of diameter of a circle  $x^2 + y^2 - 6x + 5y - 7 = 0$  is  $(7, -8)$ . Find the coordinates of other end.
9. Find the equation of the ellipse coordinates of whose foci are  $(\pm 2, 0)$  and length of latus rectum is  $\frac{10}{3}$ .
10. Find the equation of ellipse with eccentricity  $\frac{3}{4}$ , centre at origin, foci on y-axis and passing through point  $(6, 4)$ .
11. Find the equation of hyperbola with centre at origin, transverse axis along x-axis, eccentricity  $\sqrt{5}$  and sum of lengths of whose axes is 18.
12. Two diameters of a circle are along the lines  $x - y - 9 = 0$  and  $x - 2y - 7 = 0$  and area of circle is 154 square units, find its equation.
13. Find equation(s) of circle passing through points  $(1,1)$ ,  $(2,2)$  and whose radius is 1 unit.
14. Find equation of circle concentric with circle  $4x^2 + 4y^2 - 12x - 16y - 21 = 0$  and of half its area.
15. Find the equation of a circle whose centre is at  $(4, -2)$  and  $3x - 4y + 5 = 0$  is tangent to circle.

### Long Answer Type Questions (6 Marks)

16. Show that the four points  $(7,5)$ ,  $(6, -2)$ ,  $(-1, -1)$  and  $(0,6)$  are noncyclic. [Noncyclic points: Four or more points which lie on a circle].

## Answer

1.  $\left(-1, \frac{2}{3}\right), \frac{4}{3}$

2. No

3.  $x^2 + y^2 + 2x - 2y - 3 = 0$  or  $(x + 1)^2 + (y - 1)^2 = 5$

4.  $-3, +3$

5.  $\frac{9}{2}$

6.  $\left(\frac{2}{3}, 0\right), \frac{8}{3}$

7.  $\frac{4}{5}$

8.  $(-1, 3)$

9.  $\frac{x^2}{9} + \frac{y^2}{5} = 1$

10.  $16x^2 + 7y^2 = 688$

11.  $4x^2 - y^2 = 36$

12.  $x^2 + y^2 - 22x - 4y + 76 = 0$

[Hint: Point of intersection of two diameters is the centre]

13.  $x^2 + y^2 - 2x - 4y + 4 = 0, x^2 + y^2 - 4x - 2y + 4 = 0$

14.  $2x^2 + 2y^2 - 6x + 8y + 1 = 0$

15.  $x^2 + y^2 - 8x + 4y - 5 = 0$