CIRCLES EXEMPLAR QUESTIONS [13-11-2025]

1. Find the equation of the circle which touches the both axes in first quadrant and whose radius is a.
2. Show that the point (x, y) given by $x = \frac{2at}{1+t^2}$ and $y = \frac{a(1-t^2)}{1+t^2}$ lies on a circle for all real values of t such that $-1 \leq t \leq 1$ where a is any given real numbers.
3. If a circle passes through the point $(0,0)$, $(a, 0), (0, b)$ then find the coordinates of its centre.
4. Find the equation of the circle which touches x -axis and whose centre is $(1,2)$.
5. If the lines $3x - 4y + 4 = 0$ and $6x - 8y - 7 = 0$ are tangents to a circle, then find the radius of the circle.
6. Find the equation of a circle which touches both the axes and the line $3x - 4y + 8 = 0$ and lies in the third quadrant.
7. If one end of a diameter of the circle $x^2 + y^2 - 4x - 6y + 11 = 0$ is $(3,4)$, then find the coordinate of the other end of the diameter.
8. Find the equation of the circle having $(1, -2)$ as its centre and passing through $3x + y = 14, 2x + 5y = 18$
9. If the line $y = \sqrt{3}x + k$ touches the circle $x^2 + y^2 = 16$, then find the value of k.
10. Find the equation of a circle concentric with the circle $x^2 + y^2 - 6x + 12y + 15 = 0$ and has double of its area.
11. If the lines $2x - 3y = 5$ and $3x - 4y = 7$ are the diameters of a circle of area 154 square units, then obtain the equation of the circle.
12. Find the equation of the circle which passes through the points (2, 3) and (4, 5) and the centre lies on the straight line $y - 4x + 3 = 0$.
13. Find the equation of a circle whose centre is (3, -1) and which cuts off a chord of length 6 units on the line $2x - 5y + 18 = 0$.
14. Find the equation of a circle of radius 5 which is touching another circle $x^2 + y^2 - 2x - 4y - 20 = 0$ at (5, 5).
15. Find the equation of a circle passing through the point (7, 3) having radius 3 units and whose centre lies on the line $y = x - 1$.
16. The line $x + 3y = 0$ is a diameter of the circle $x^2 + y^2 + 6x + 2y = 0$.
17. The shortest distance from the point (2, -7) to the circle $x^2 + y^2 - 14x - 10y - 151 = 0$ is equal to 5.
18. If the line $lx + my = 1$ is a tangent to the circle $x^2 + y^2 = a^2$, then the point (l, m) lies on a circle.
19. The point (1, 2) lies inside the circle $x^2 + y^2 - 2x + 6y + 1 = 0$.
20. The equation of the circle having centre at (3, -4) and touching the line $5x + 12y - 12 = 0)$ is _____.
21. The equation of the circle circumscribing the triangle whose sides are the lines $y = x + 2, 3y = 4x, 2y = 3x$ is _____.
22. The area of the circle centred at (1, 2) and passing through (4, 6) is
    (A) 5π (B) 10π (C) 25π (D) none of these
23. Equation of a circle which passes through (3, 6) and touches the axes is

(A) $x^2 + y^2 + 6x + 6y + 3 = 0$ (B) $x^2 + y^2 - 6x - 6y - 9 = 0$

(C) $x^2 + y^2 - 6x - 6y + 9 = 0$ (D) none of these

24. Equation of the circle with centre on the \(y\)-axis and passing through the origin and the point (2, 3) is

(A) $x^2 + y^2 + 13y = 0$ (B) $3x^2 + 3y^2 + 13x + 3 = 0$

(C) $6x^2 + 6y^2 - 13x = 0$ (D) $x^2 + y^2 + 13x + 3 = 0$

25. 5The equation of a circle with origin as centre and passing through the vertices of an equilateral triangle whose median is of length \(3a\) is

(A) $x^2 + y^2 = 9a^2$ (B) $x^2 + y^2 = 16a^2$

(C) $x^2 + y^2 = 4a^2$ (D) $x^2 + y^2 = a^2$