CONIC SECTIONS

December 30, 2022

11^{th} Maths - Chapter 11, Exercise 11.1

In each of the following Exercises 1 to 5 , find the equation of the circle with

1. centre $(0, 2)$ and radius 2
2. centre $(-2, 3)$ and radius 4
3. centre $\left(\frac{1}{2}, \frac{1}{4}\right)$ and radius $\frac{1}{12}$
4. centre $(1, 1)$ and radius $\sqrt{2}$
5. centre $(-a, -b)$ and radius $\sqrt{a^2 - b^2}$.

   In each of the following Exercises 6 to 9 , find the centre and radius of the circles.

6. $(x + 5)^2 + (y - 3)^2 = 36$
7. $x^2 + y^2 - 4x - 8y - 45 = 0$
8. $x^2 + y^2 - 8x + 10y - 12 = 0$
9. $2x^2 + 2y^2 - x = 0$
10. Find the equation of the circle passing through the points $(4, 1)$ and $(6, 5)$ and whose centre is on the line $4x + y = 16$.

11. Find the equation of the circle passing through the points $(2, 3)$ and $(-1, 1)$ and whose centre is on the line $x - 3y - 11 = 0$.

12. Find the equation of the circle with radius 5 whose centre lies on x-axis and passes through the point $(2, 3)$.

13. Find the equation of the circle passing through $(0, 0)$ and making intercepts a and b on the coordinate axes.

14. Find the equation of a circle with centre $(2, 2)$ and passes through the point $(4, 5)$.

15. Does the point $(-2.5, 3.5)$ lie inside, outside or on the circle $x^2 + y^2 = 25$?