Practice Questions

Q4. 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.

S4. Given equation of the circle, we first convert it into center-radius form to get center of the circle, or one can simply use center result from genreal form of circle.

$$x^2 - 4x + y^2 - 6y + 11 = 0$$

$$x^2 - 4x + 4 + y^2 - 6y + 9 + 11 - 13 = 0$$

the above equation can be written as

$$x^2 - 2(2)x + 2^2 + y^2 - 2(3)y + 3^2 + 11 - 13 = 0$$

on simplifying we get

$$(x - 2)^2 + (y - 3)^2 = 2$$

$$(x - 2)^2 + (y - 3)^2 = (\sqrt{2})^2$$

Since, the equation of a circle having centre (h, k), having radius as r units, is

$$(x - h)^2 + (y - k)^2 = r^2$$

We have centre = (2, 3)
The centre point is the mid-point of the two ends of the diameter of a circle.
Let the points be (p, q). So,

$$\frac{p + 3}{2} = 2$$
$$\frac{q + 4}{2} = 3$$

by solveing above we get,$p = 1$ and $q = 2$
Hence, the other ends of the diameter are (1, 2).