Solution for Question 1.5.16

AI24BTECH11035-Preethika

1) Find the coordinates of a point A where AB is a diameter of the circle with center (3, -1) and the point B is (2, 6).

Solution: Given,
Center of the circle C = (3, -1), and point B = (2, 6).
Let the coordinates of point A be (x, y). Since AB is the diameter of the circle, the center is the midpoint of A and B.
Using the midpoint formula, we have:

$$\left(\frac{x+2}{2}, \frac{y+6}{2}\right) = (3, -1)$$

This gives two equations:

$$\frac{x+2}{2} = 3 \quad \Rightarrow \quad x+2 = 6 \quad \Rightarrow \quad x = 4$$

$$\frac{y+6}{2} = -1 \quad \Rightarrow \quad y+6 = -2 \quad \Rightarrow \quad y = -8$$

Therefore, the coordinates of point A are (4, -8).

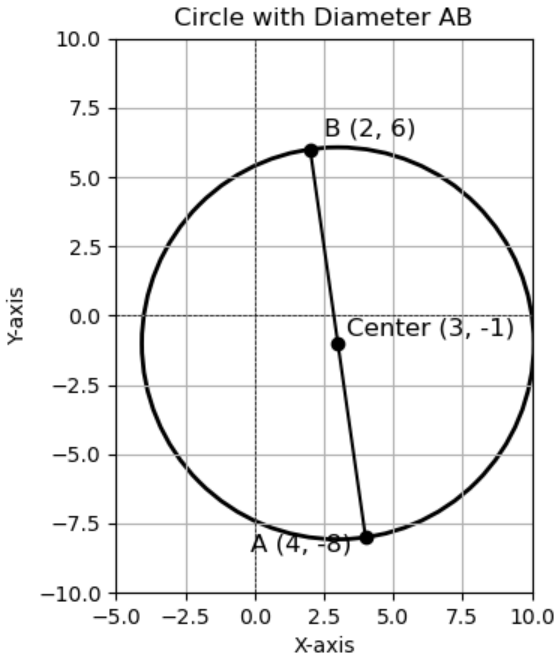

Fig. 1. Graph of the Circle with Diameter AB