EE24BTECH11019 - DWARAK A

Question:

The centre of a circle whose end points of a diameter are (-6,3) and (6,4) is ______.

Solution:

Point	Description
A (-6, 3)	First end-point of the circle's diameter
B (6, 4)	Second end-point of the circle's diameter
$\mathbf{C}(x,y)$	Centre of the circle

TABLE 0: Variables Used

Center of a circle divides its diameter in the ration 1:1 internally.

Section Formula:

$$\mathbf{C} = \frac{k\mathbf{B} + \mathbf{A}}{k+1} \tag{0.1}$$

Here,

$$k = 1 \tag{0.2}$$

From equations 0.1 and 0.2, the vector C is:

$$\mathbf{C} = \frac{\mathbf{A} + \mathbf{B}}{2} \tag{0.3}$$

$$\mathbf{C} = \frac{\binom{-6}{3} + \binom{6}{4}}{2} \tag{0.4}$$

$$\mathbf{C} = \frac{\binom{0}{7}}{2} \tag{0.5}$$

$$\mathbf{C} = \begin{pmatrix} 0 \\ 3.5 \end{pmatrix} \tag{0.6}$$

The coordinates of the center of the circle C is $\begin{pmatrix} 0 \\ 3.5 \end{pmatrix}$

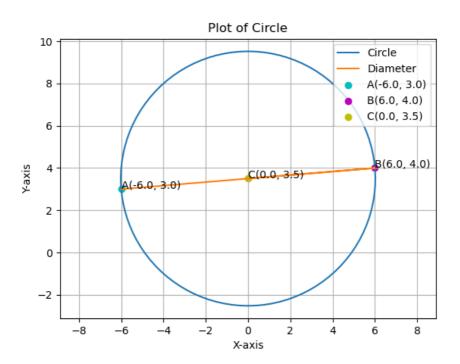


Fig. 0.1: Plot of end-points of diameter \boldsymbol{A} and \boldsymbol{B} and center of circle \boldsymbol{C}