1.5.16

EE25btech11028 - J.Navya sri

Question: 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: let *C* be the center of circle

Point	Vector
В	$\begin{pmatrix} 2 \\ 6 \end{pmatrix}$
С	$\begin{pmatrix} 3 \\ -1 \end{pmatrix}$

Given points:

$$C(3,-1)$$

As C is the center of the circle, it divides AB in 1:1 ratio. If P divides QR in k:1 ratio, then

$$P = \frac{kR + 1(Q)}{k + 1}$$

Now,

$$C = \left(\frac{A+B}{2}\right)$$

$$2\begin{pmatrix} 3 \\ -1 \end{pmatrix} = \begin{pmatrix} x \\ y \end{pmatrix} + \begin{pmatrix} 2 \\ 6 \end{pmatrix}$$

$$\begin{pmatrix} 6 \\ -2 \end{pmatrix} = \begin{pmatrix} x+2 \\ y+6 \end{pmatrix}$$

$$x + 2 = 6 \implies x = 4$$

$$y + 6 = -2 \implies y = -8$$

Hence,

$$(x, y) = (4, -8)$$

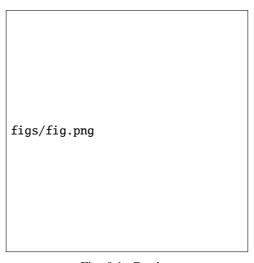


Fig. 0.1: Caption