## EE24BTECH11022 - Eshan Sharma

## **Question:**

Find the coordinates of a point A where AB is a diameter of the circle with centre (-2, 2) and B is the point (3, 4)

## **Solution:**

Let the point **A** be (x, y).

Since AB is the diameter with centre of circle being (-2, 2),

Centre of circle =  $\frac{A+B}{2}$ 

$$\binom{-2}{2} = \frac{1}{2} \left( \binom{x}{y} + \binom{3}{4} \right)$$
 (0.1)

$$\binom{-2}{2} = \frac{1}{2} \left( \binom{x}{y} + \binom{3}{4} \right)$$
 (0.2)

$$2 \cdot \begin{pmatrix} -2\\2 \end{pmatrix} = \begin{pmatrix} x\\y \end{pmatrix} + \begin{pmatrix} 3\\4 \end{pmatrix} \tag{0.3}$$

$$\begin{pmatrix} -4\\4 \end{pmatrix} = \begin{pmatrix} x+3\\y+4 \end{pmatrix}$$
 (0.4)

$$-4 = x + 3 \tag{0.5}$$

$$x = -4 - 3 = -7 \tag{0.6}$$

$$4 = y + 4 \tag{0.7}$$

$$y = 4 - 4 = 0 \tag{0.8}$$

Therefore, the coordinates of point **A** are (-7,0).

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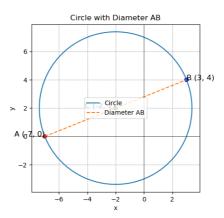


Fig. 0.1: Circle with Diameter AB and Center O(-2, 2)