

# assignment2:1.5.4

AI24BTECH11007 - Sri Sathwik Desaboina

## Question:

A circle has its center at  $\begin{pmatrix} 4 \\ 4 \end{pmatrix}$ . If one end of a is  $\begin{pmatrix} 4 \\ 0 \end{pmatrix}$ , then find the coordinates of the other end.

**Solution:** Since the centre **O** is the mid point of **A** and **B**.

Point	Description	Coordinates
<b>O</b>	centre of the circle	$\begin{pmatrix} 4 \\ 4 \end{pmatrix}$
<b>A</b>	A Point on the circle	$\begin{pmatrix} 4 \\ 0 \end{pmatrix}$
<b>B</b>	Diametrically opposite point to A	?

TABLE 0

INPUT PARAMETERS

$$\mathbf{O} = \begin{pmatrix} \frac{x_1+4}{2} \\ \frac{y_1+0}{2} \end{pmatrix} \quad (1)$$

$$\begin{pmatrix} \frac{x_1+4}{2} \\ \frac{y_1+0}{2} \end{pmatrix} = \begin{pmatrix} 4 \\ 4 \end{pmatrix} \quad (2)$$

$$\frac{x_1 + 4}{2} = 4 \implies x_1 = 4 \quad (3)$$

$$\frac{y_1 + 0}{2} = 4 \implies y_1 = 8 \quad (4)$$

$$\therefore \mathbf{B} \begin{pmatrix} x_1 \\ y_1 \end{pmatrix} = \mathbf{B} \begin{pmatrix} 4 \\ 8 \end{pmatrix}.$$

Plot:

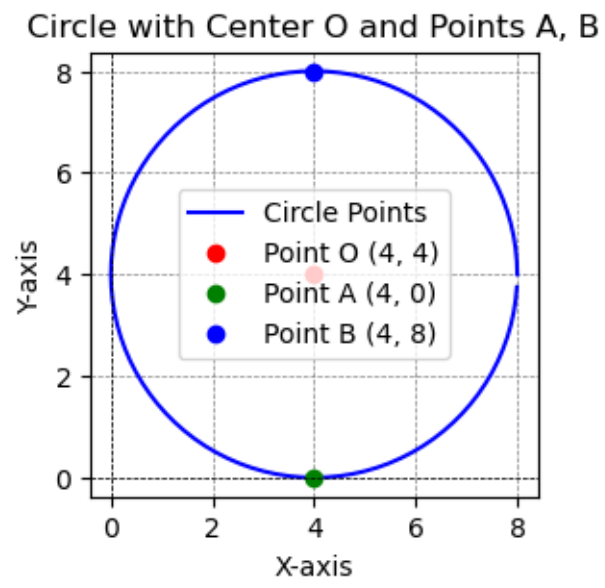


Fig. 0. Circle with center  $\begin{pmatrix} 4 \\ 4 \end{pmatrix}$  and diameter points  $A\begin{pmatrix} 4 \\ 0 \end{pmatrix}$  and  $B\begin{pmatrix} 4 \\ 8 \end{pmatrix}$ .