Matrix theory

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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).

Point	Value	Description
C	$(3,-1)$	Centre of the cicle
B	$(2,6)$	Given point B
A	(x,y)	Coordinates of A

TABLE 0: Variables Used

Solution: Given,
Center of the circle $\mathbf{C} = (3,-1)$, and point $\mathbf{B} = (2,6)$.

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**.

$$\mathbf{C} = \frac{\mathbf{A}+\mathbf{B}}{2} \tag{1}$$

$$= \frac{(x,y)+(2,6)}{2} \tag{2}$$

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

Given the centre of the circle **C** is (3,-1),we can write

$$\left(\frac{x+2}{2}, \frac{y+6}{2}\right) = (3,-1) \tag{4}$$

By solving this two equations we get:

$$x = 4 \tag{5}$$

$$y = -8 \tag{6}$$

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

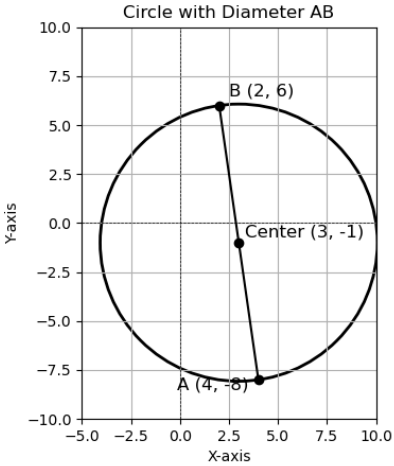

Fig. 0: Graph of the Circle with Diameter AB