

1.3.9

AI25BTECH110030 - SARVESH TAMGADE

Question:

The center of a circle is at $(2, 0)$. If one end of a diameter is at $(6, 0)$, then find the other end.

Solution:

Since the center C is the midpoint of the diameter endpoints A and B ,

$$C = \frac{A + B}{2}$$

Multiply both sides by 2:

$$2C = A + B$$

Rearranged for B :

$$B = 2C - A = 2 \begin{bmatrix} 2 \\ 0 \end{bmatrix} - \begin{bmatrix} 6 \\ 0 \end{bmatrix} = \begin{bmatrix} 4 \\ 0 \end{bmatrix} - \begin{bmatrix} 6 \\ 0 \end{bmatrix} = \begin{bmatrix} -2 \\ 0 \end{bmatrix}$$

Answer: The other end of the diameter is at

$$B = \begin{bmatrix} -2 \\ 0 \end{bmatrix}$$

Graph:

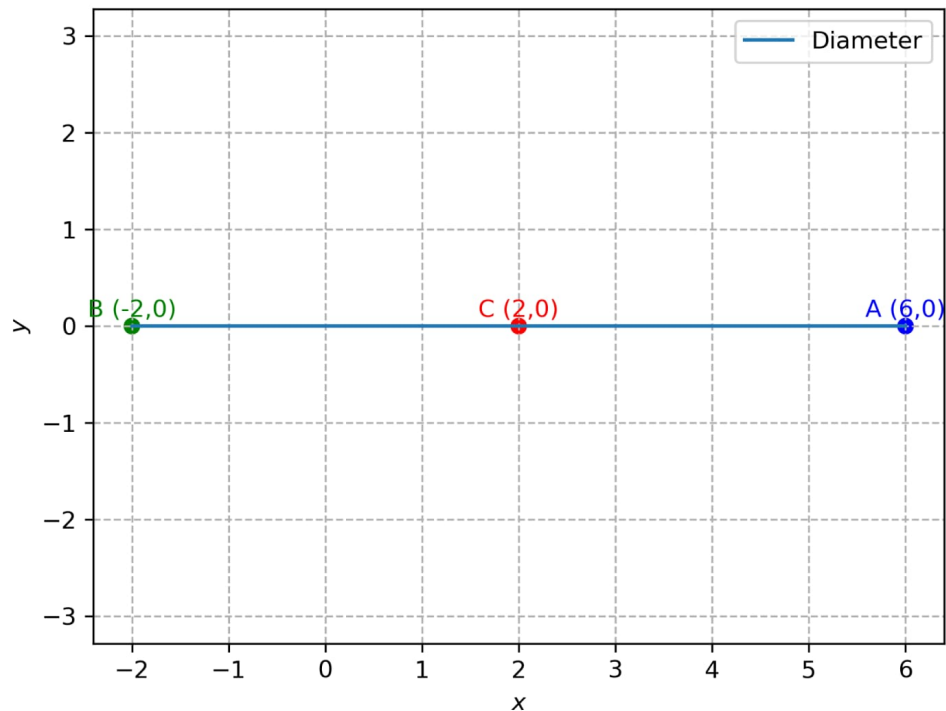


Fig. 1: Stem plot of $y(n)$