

1.5.35

EE24BTECH11012 - Bhavanisankar G S

QUESTION

The mid-point of segment **AB** is the point **P** 0,4 . If the coordinates of **B** are -2,3 then coordinates of **A** are (10, 2011)

SOLUTION

Given :

Variable name Formula	Description
<i>A</i>	The point in 2-D plane whose coordinates are to be found.
<i>B</i>	The point in 2-D plane with coordinates -2,3
<i>M</i>	The midpoint of the line-segment AB with coordinates 0,4

TABLE 0: Variables used

Coordinates of B = -2,3

Coordinates of midpoint (*sayM*) = 0,4

To Find :

Coordinates of A.

We know that the mid-point of two points, which can be treated as vectors **A** and **B** is

$$\mathbf{M} = \frac{\mathbf{A} + \mathbf{B}}{2} \quad (0.1)$$

$$\begin{aligned}
 \Rightarrow \mathbf{A} &= 2\mathbf{M} - \mathbf{B} \\
 &= 2 \begin{pmatrix} 0 \\ 4 \end{pmatrix} - \begin{pmatrix} -2 \\ 3 \end{pmatrix} \\
 &= \begin{pmatrix} 0 \\ 8 \end{pmatrix} - \begin{pmatrix} -2 \\ 3 \end{pmatrix} \\
 &= \begin{pmatrix} 2 \\ 5 \end{pmatrix}
 \end{aligned} \quad (0.2)$$

Hence, the coordinates of point **A** are 2,5 .

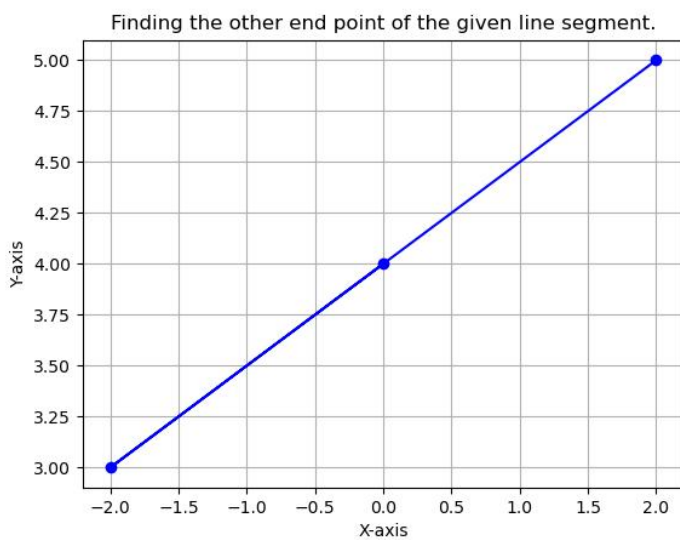


Fig. 0.1: A plot of the given question.