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
A	The point in 2-D plane whose coordinates are to be found.
B	The point in 2-D plane with coordinates -2,3
M	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

$$\mathbf{M} = \frac{\mathbf{A} + \mathbf{B}}{2} \tag{0.1}$$

$$\begin{aligned} \implies \mathbf{A} &= 2\mathbf{M} - \mathbf{B} \\ &= 2\begin{pmatrix}0\\4\end{pmatrix} - \begin{pmatrix}-2\\3\end{pmatrix} \\ &= \begin{pmatrix}0\\8\end{pmatrix} - \begin{pmatrix}-2\\3\end{pmatrix} \\ &= \begin{pmatrix}2\\5\end{pmatrix} \end{aligned} \tag{0.2}$$

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

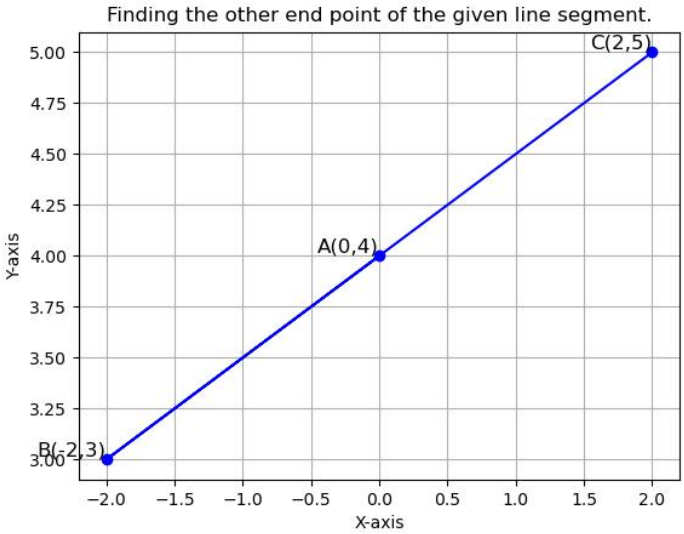

Fig. 0.1: A plot of the given question.