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 :

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 $(2, 5)$.

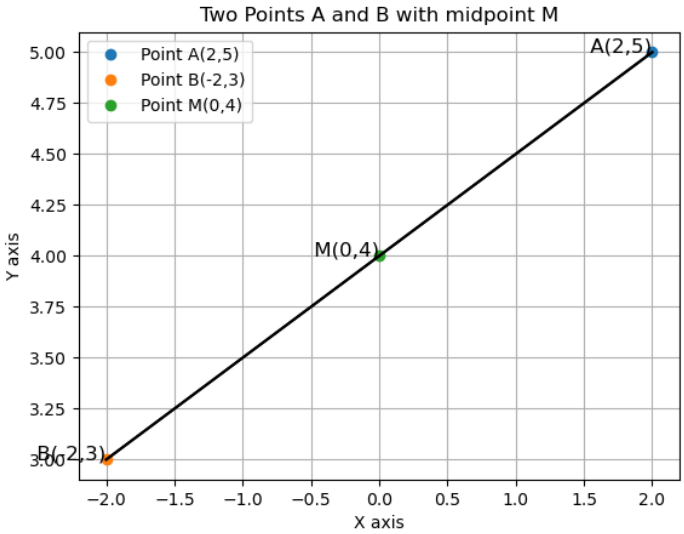

Fig. 0.1: A plot of the given question.