

1.5.28

EE25BTECH11041 - Naman Kumar

Question:

$\vec{P}(5, -3)$ and $\vec{Q}(3, y)$ are the points of trisection of the line segment joining $\vec{A}(7, -2)$ and $\vec{B}(1, -5)$. Then y equals.

Solution:

$$\vec{Q} = \frac{1}{1+k} (\vec{A} + k\vec{B}) \quad (1)$$

(2)

Putting values of k, \vec{A} and \vec{B}

$$\vec{Q} = \frac{1}{1+\frac{2}{1}} \left(\begin{pmatrix} 7 \\ -2 \end{pmatrix} + 2 \begin{pmatrix} 1 \\ -5 \end{pmatrix} \right) \quad (3)$$

$$\vec{Q} = \frac{1}{1+\frac{2}{1}} \left(\begin{pmatrix} 7 \\ -2 \end{pmatrix} + \begin{pmatrix} 2 \\ -10 \end{pmatrix} \right) \quad (4)$$

$$\vec{Q} = \frac{1}{1+2} \left(\begin{pmatrix} 9 \\ -12 \end{pmatrix} \right) \quad (5)$$

$$\vec{Q} = \begin{pmatrix} 3 \\ -4 \end{pmatrix} \quad (6)$$

$$\vec{Q} = \begin{pmatrix} 3 \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ -4 \end{pmatrix} \quad (7)$$

Therefore, y=-4

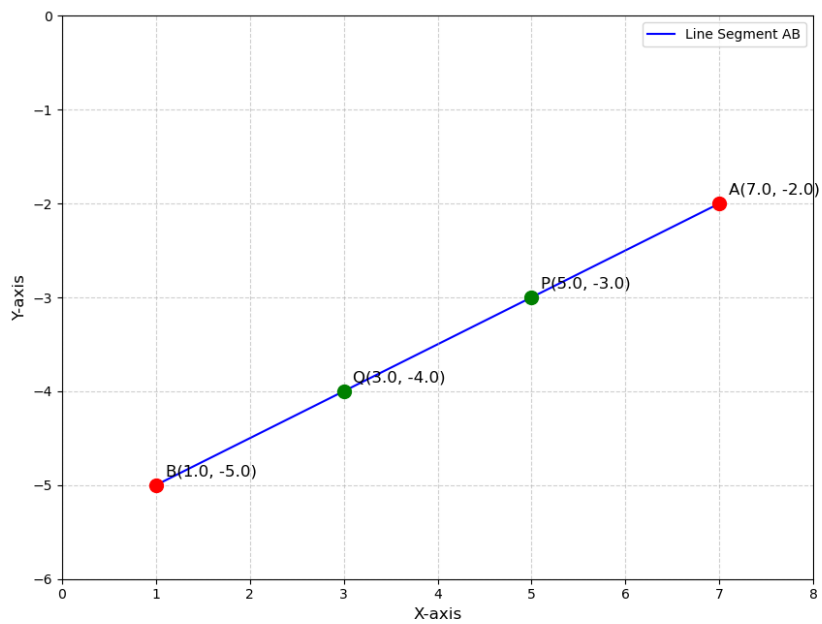


Figure 1: Caption