*Res

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:

$$\vec{Q} = \frac{1}{1+k}\left(\vec{A} + k\vec{B}\right) \tag{1}$$

$$\tag{2}$$

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

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

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

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

$$\vec{Q} = \begin{pmatrix}3\\-4\end{pmatrix} \tag{6}$$

$$\vec{Q} = \begin{pmatrix}3\\y\end{pmatrix} = \begin{pmatrix}3\\-4\end{pmatrix} \tag{7}$$

Therefore, y=-4

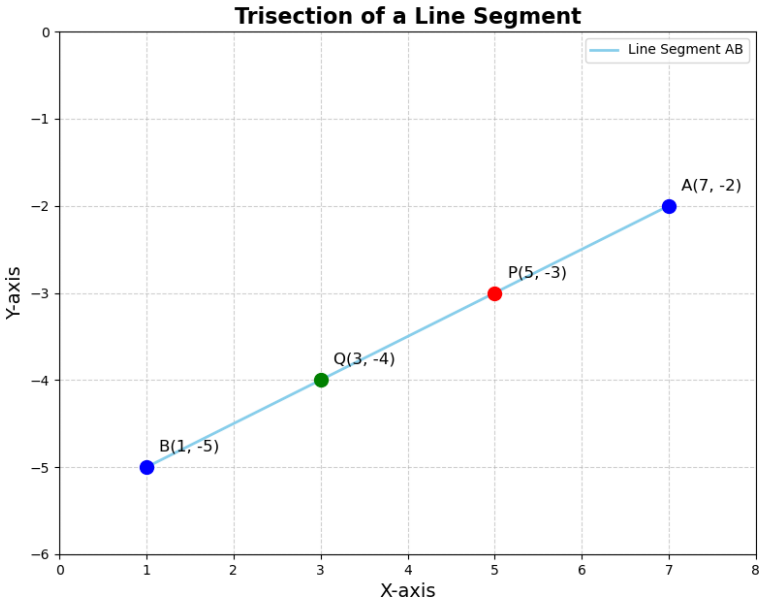

Figure 1: Caption