1.1.5.6

AI24BTECH11005 - Bhukya Prajwal Naik

Question:

The point which divides the line segment joining the points $\begin{pmatrix}7\\-6\end{pmatrix}$,$\begin{pmatrix}3\\4\end{pmatrix}$ in the ratio 1:2 is . **Solution:**

Given points	Respective coordinates
A	$\begin{pmatrix}7\\-6\end{pmatrix}$
B	$\begin{pmatrix}3\\4\end{pmatrix}$
P	$\begin{pmatrix}x\\y\end{pmatrix}$

TABLE 0: Coordinates of points involved

Given, P divides the line segment AB in ratio 1:2.
Using the section formula,

$$\mathbf{P} = \frac{1}{1+k}\begin{pmatrix}\mathbf{A} & \mathbf{B}\end{pmatrix}\begin{pmatrix}1\\k\end{pmatrix} \tag{0.1}$$

$$\mathbf{P} = \frac{1}{1+\frac{1}{2}}\begin{pmatrix}7 & 3\\-6 & 4\end{pmatrix}\begin{pmatrix}1\\\frac{1}{2}\end{pmatrix} \tag{0.2}$$

$$\mathbf{P} = \begin{pmatrix}\frac{17}{3}\\\frac{-8}{3}\end{pmatrix} \tag{0.3}$$

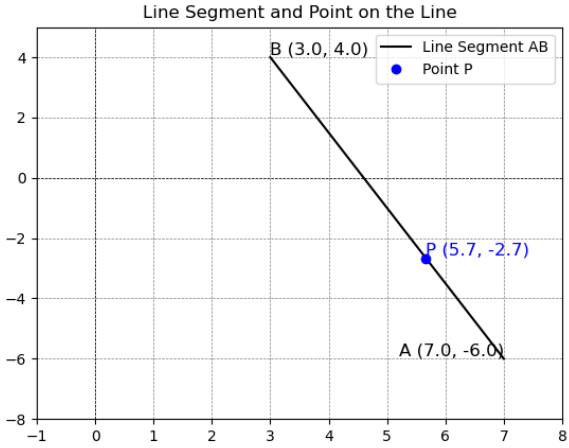

Fig. 0.1: Plot of points A,B,P