1.15.29

EE24BTECH11005 - Arjun Pavanje

Question:
The coordinates of the point **P** dividing the line segment joining the points **A**(1,3) and **B**(4,6) in the ratio 2:1 are (10, 2012)

Solution: If P divides AB in the ratio $k:1$,

Variable	Description
P	Point to be found
A	$(1,3)$ point
B	$(4,6)$ point
k	ratio in which P divides AB

TABLE I: Variables Used

$$\mathbf{P} = \frac{k\mathbf{B} + \mathbf{A}}{k+1} \tag{1}$$

From equation 1 we have

$$P = \frac{k\begin{pmatrix}4\\6\end{pmatrix} + \begin{pmatrix}1\\3\end{pmatrix}}{k+1} \tag{2}$$

$$= \frac{\begin{pmatrix}4k+1\\6k+3\end{pmatrix}}{k+1} \tag{3}$$

here, $k = 2$, so putting the k value into 3 we get

$$P = \frac{\begin{pmatrix}9\\15\end{pmatrix}}{3} \tag{4}$$

$$= \begin{pmatrix}3\\5\end{pmatrix} \tag{5}$$

The coordinates of the required point P are $\begin{pmatrix}3\\5\end{pmatrix}$

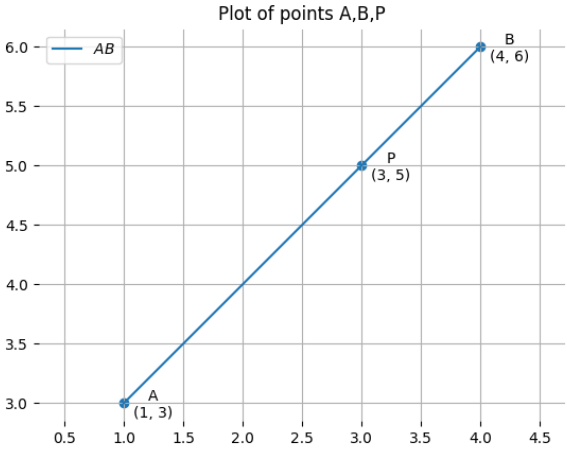

Fig. 1: Plot of the points A,B,P