

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:

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

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

$$\mathbf{P} = \frac{k\mathbf{B} + \mathbf{A}}{k + 1} \quad (1)$$

From equation 1 we have

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

$$= \frac{\begin{pmatrix} 4k + 1 \\ 6k + 3 \end{pmatrix}}{k + 1} \quad (3)$$

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

$$P = \frac{\begin{pmatrix} 9 \\ 15 \end{pmatrix}}{3} \quad (4)$$

$$= \begin{pmatrix} 3 \\ 5 \end{pmatrix} \quad (5)$$

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

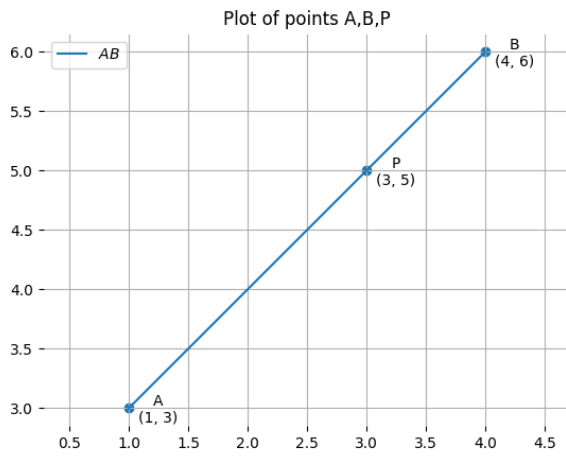


Fig. 1: Plot of the points A,B,P