1-1.5-29

EE24BTECH11005 - Arjun Pavanje

Question:

The coordinates of the point P dividing the line segment joining the point $\mathbf{A}\begin{pmatrix}1\\3\end{pmatrix}$ and $\mathbf{B}\begin{pmatrix}4\\6\end{pmatrix}$ in the ratio 2:1 are (10, 2012)

Solution:

Variable	Description
P	Point to be found
A	$\begin{pmatrix}1\\3\end{pmatrix}$ point
B	$\begin{pmatrix}4\\6\end{pmatrix}$ point
k	ratio in which P divides AB

TABLE I: Variables Used

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

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

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

here, $k = 2$, so putting the k we get

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

The coordinates of the required point P are

$$\begin{pmatrix}3\\5\end{pmatrix} \tag{4}$$

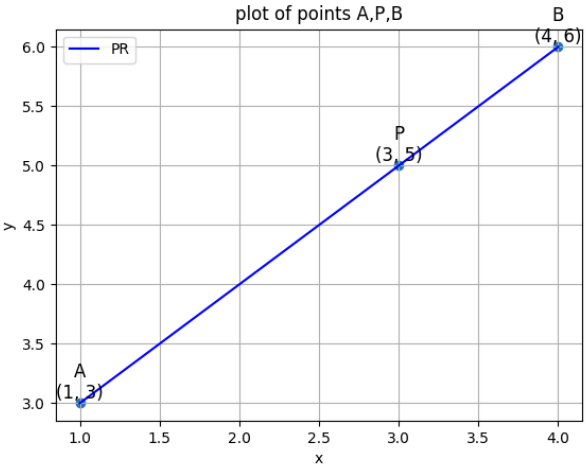

Fig. 1: Plot of the points A,B,P