1.5.8

EE25BTECH11020 - Darsh Pankaj Gajare

Question:
Find the ratio in which $\mathbf{P}(4,5)$ divides the line segment joining $\mathbf{A}(2,3)$ and $\mathbf{B}(7,8)$.
Solution: Given:

TABLE I: Given data

Point	matrix
A	$\begin{pmatrix}2\\3\end{pmatrix}$
B	$\begin{pmatrix}7\\8\end{pmatrix}$
P	$\begin{pmatrix}4\\5\end{pmatrix}$

Using Section Formula,

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

$$\begin{pmatrix}4\\5\end{pmatrix} = \frac{k\begin{pmatrix}7\\8\end{pmatrix} + \begin{pmatrix}2\\3\end{pmatrix}}{k+1} \tag{2}$$

$$3k\begin{pmatrix}1\\1\end{pmatrix} = 2\begin{pmatrix}1\\1\end{pmatrix} \tag{3}$$

$$or, k = \frac{2}{3} \tag{4}$$