

1-1.5-11

AI24BTECH11015 - Harshvardhan Patidar

Question:

The point **R** divides the line segment **AB**, where **A**(-4,0) and **B**(0,6) such that $AR = \frac{3}{4}AB$. Find the coordinates of **R**.

Solution: :

We have,

$$AR = \frac{3}{4}AB \quad (0.1)$$

$$AR : RB = 3 : 1 \quad (0.2)$$

We have, if **R** divides the line **AB** in ratio $k : 1$ then,

$$\mathbf{R} = \left(\frac{k\mathbf{B} + \mathbf{A}}{k + 1} \right)$$

Using the above formula, the desired point is

$$\frac{1}{3 + 1} \left(3 \begin{pmatrix} 0 \\ 6 \end{pmatrix} + \begin{pmatrix} -4 \\ 0 \end{pmatrix} \right) \quad (0.3)$$

$$\begin{pmatrix} -1 \\ 4.5 \end{pmatrix} \quad (0.4)$$

