1-1.5-11

AI24BTECH11015 - Harshvardhan Patidar

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

Solution: :

We have,

$$AR = \frac{3}{4}AB \tag{0.1}$$

$$AR : RB = 3 : 1 \tag{0.2}$$

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

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

$$\mathbf{R} = \begin{pmatrix}-1\\4.5\end{pmatrix} \tag{0.4}$$