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,

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

$$AR: RB = 3:1$$
 (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

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

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

