1.5.19

EE24BTECH11003 - Akshara Sarma Chennubhatla

Question:
Find the ratio in which the segment joining the points $(1,3)$ and $(4,5)$ is divided by the X axis. Also find the coordinates of this point on the X axis. Using section formula,

Solution:

$$\begin{pmatrix} x \\ 0 \end{pmatrix} = \frac{\begin{pmatrix} 1 \\ 3 \end{pmatrix} + k\begin{pmatrix} 4 \\ 5 \end{pmatrix}}{1+k} \tag{1}$$

$$\implies \frac{5k+3}{k+1} = 0 \tag{2}$$

$$\implies k = \frac{-3}{5} \tag{3}$$

$$x = \frac{1}{k+1} + \frac{4k}{k+1} \tag{4}$$

$$\implies x = \frac{1+4\left(\frac{-3}{5}\right)}{\left(\frac{-3}{5}\right)+1} \tag{5}$$

$$\implies x = \frac{-7}{2} \tag{6}$$

Therefore the ratio in which the line segment joining the points $(1,3)$ and $(4,5)$ is divided by the X axis is $-3:5$. The point on the X axis which divides the line segment in the ratio is $\left(\frac{-7}{2}, 0\right)$