1.5.38

AI24BTECH11019-KOTHA PRATHEEK REDDY

Question:
Find the ratio in which the Y axis divides the line segment joining the points $\brak{6,-4}$ and $\brak{-2,-7}$. Also find the point of intersection.

Solution:
Let $\mathbf{A} = \brak{6,-4}$ and $\mathbf{B} = \brak{-2,-7}$
Let the line segment joining $\mathbf{A}$ and $\mathbf{B}$ meet the Y-axis at $\mathbf{C}\brak{0,y}$

$$\mathbf{C} = \frac{k\mathbf{A} + \mathbf{B}}{k+1} \tag{0.1}$$

equating the x coordinates, we get

$$0 = \frac{6k-2}{k+1} \tag{0.2}$$

$$k = \frac{1}{3} \tag{0.3}$$

$$y = \frac{-4k-7}{k+1} \tag{0.4}$$

On solving we get,

$$y = -\frac{25}{4} \tag{0.5}$$

$$\mathbf{C} = \brak{0,-\tfrac{25}{4}} \tag{0.6}$$

Point	Coordinates
$\mathbf{A}$	$\brak{6,-4}$
$\mathbf{B}$	$\brak{-2,-7}$
$\mathbf{C}$	$\brak{0,-\frac{25}{4}}$

TABLE 0: Coordinates

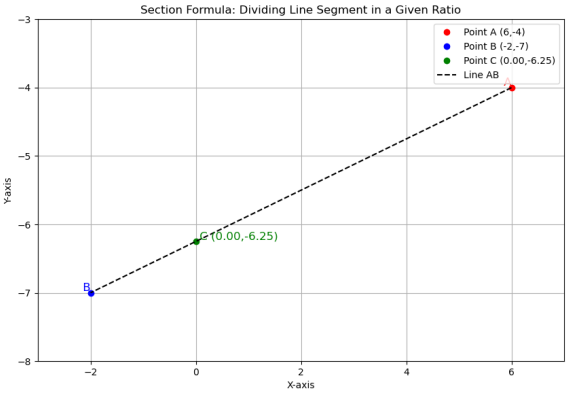

Fig. 0.1: Line joining A and B