

AI1110 ASSIGNMENT 1

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Q3 (b): M and N are two points on the X axis and Y axis respectively. $P(3, 2)$ divides the line segment MN in the ratio 2:3.

Find:

- (i) the coordinates of M and N
- (ii) the slope of MN.

Solution:

Given,

M and N are two points on X and Y axes respectively.

Let M be $(a, 0)$ and N be $(0, b)$

P divides MN in the ratio 2:3.

According to Section formula,

$$P \equiv \left(\frac{2(0) + 3(a)}{2 + 3}, \frac{2(b) + 3(0)}{2 + 3} \right)$$

$$P \equiv \left(\frac{3a}{5}, \frac{2b}{5} \right)$$

But we have,

$$P \equiv (3, 2)$$

Therefore,

$$\begin{aligned} \frac{3a}{5} &= 3 \\ \Rightarrow a &= 5 \end{aligned}$$

$$\begin{aligned} \frac{2b}{5} &= 2 \quad (1) \\ b &= 5 \quad (2) \end{aligned}$$

$$(i) M \equiv (5, 0) \text{ and } N \equiv (0, 5)$$

$$\begin{aligned} (ii) \text{ Slope of MN} &= \frac{5 - 0}{0 - 5} \\ &= -1 \end{aligned}$$

