1-1.4-9f

EE24BTECH11043 - Murra Rajesh Kumar Reddy

Question:
The point which divides the line segment joining the points $P(7,-6)$ and $Q(3,4)$ in the ratio $1:2$ internally lies in which quadrant?
Solution:
Section Formula: The line segment $A\left(x_1,y_1\right)$ and $B\left(x_2,y_2\right)$ is internally divided by the point $C\left(x,y\right)$ in the ratio $m:n$ is given by

$$C\left(x,y\right)=\left(\frac{mx_2+nx_1}{m+n},\frac{my_2+ny_1}{m+n}\right) \tag{0.1}$$

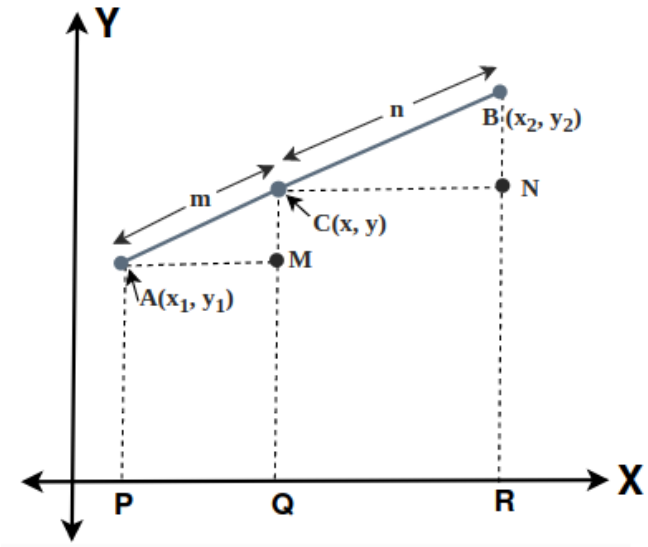

Fig. 0.1: Section Formula

Let $R\left(x,y\right)$ be the point which divides the line segment $P\left(7,-6\right)$ and $Q\left(3,4\right)$ in the ratio $1:2$ internally

From equation 0.1 $R(x, y)$ is :

$$R(x, y) = \left(\frac{1 \times 3 + 2 \times 7}{1 + 2}, \frac{1 \times 4 + 2 \times (-6)}{1 + 2} \right) \tag{0.2}$$

$$\implies R(x, y) = \left(\frac{17}{3}, \frac{-8}{3} \right) \tag{0.3}$$