

Question 1.4.15

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1 Question:

The point which divides the line segment joining the points $\mathbf{P}(7, -6)$ and $\mathbf{Q}(3, 4)$ in the ratio $1 : 2$ internally lies in which quadrant?

2 Solution:

The point \mathbf{C} that divides points \mathbf{P} and \mathbf{Q} in the ratio $l : m$ is

$$\mathbf{C} = \frac{m\mathbf{P} + l\mathbf{Q}}{l + m} \quad (1)$$

\therefore The point \mathbf{R} dividing \mathbf{P} and \mathbf{Q} in the ratio $1 : 2$ is

$$\mathbf{R} = \frac{2 \cdot \mathbf{P} + 1 \cdot \mathbf{Q}}{1 + 2} \quad (2)$$

$$\mathbf{R} = \left(\frac{17}{3}, \frac{8}{3} \right) \quad (3)$$

Clearly this point lies in the 1st quadrant.

3 Plot:

