Question 1.4.15

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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?

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 that ratio is $\mathbf{R} = \begin{pmatrix} \frac{17}{3} \\ -\frac{8}{3} \end{pmatrix}$ (2)

Clearly this point lies in the 4^{th} quadrant.

Plot: