

Coordinate Geometry

10th Maths - Chapter 7

This is Problem-4 from Exercise 7.2

1. Find the ratio in which the line segment joining the points $\begin{pmatrix} -3 \\ 10 \end{pmatrix}$ and $\begin{pmatrix} 6 \\ -8 \end{pmatrix}$ is divided by $\begin{pmatrix} -1 \\ 6 \end{pmatrix}$.

Solution:

The input parameters for this problem are available in Table

Symbol	Value	Description
P	$\begin{pmatrix} -3 \\ 10 \end{pmatrix}$	First point
Q	$\begin{pmatrix} 6 \\ -8 \end{pmatrix}$	Second point
R	$\begin{pmatrix} -1 \\ 6 \end{pmatrix}$	Desired point

Table 1

Using section formula,

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

and the ratio of line segment when divide by point \mathbf{R} ,

$$\mathbf{n} = \frac{\mathbf{Q} - \mathbf{R}}{\mathbf{R} - \mathbf{P}} \quad (2)$$

$$\Rightarrow \frac{\begin{pmatrix} 6 \\ -8 \end{pmatrix} - \begin{pmatrix} -1 \\ 6 \end{pmatrix}}{\begin{pmatrix} -1 \\ 6 \end{pmatrix} - \begin{pmatrix} -3 \\ 10 \end{pmatrix}} \quad (3)$$

$$\Rightarrow \frac{\begin{pmatrix} -7 \\ 14 \end{pmatrix}}{\begin{pmatrix} -2 \\ 4 \end{pmatrix}} \Rightarrow \begin{pmatrix} \frac{7}{2} \\ 7 \end{pmatrix} \quad (4)$$

Hence the ratio \mathbf{n} is $\frac{7}{2}$.

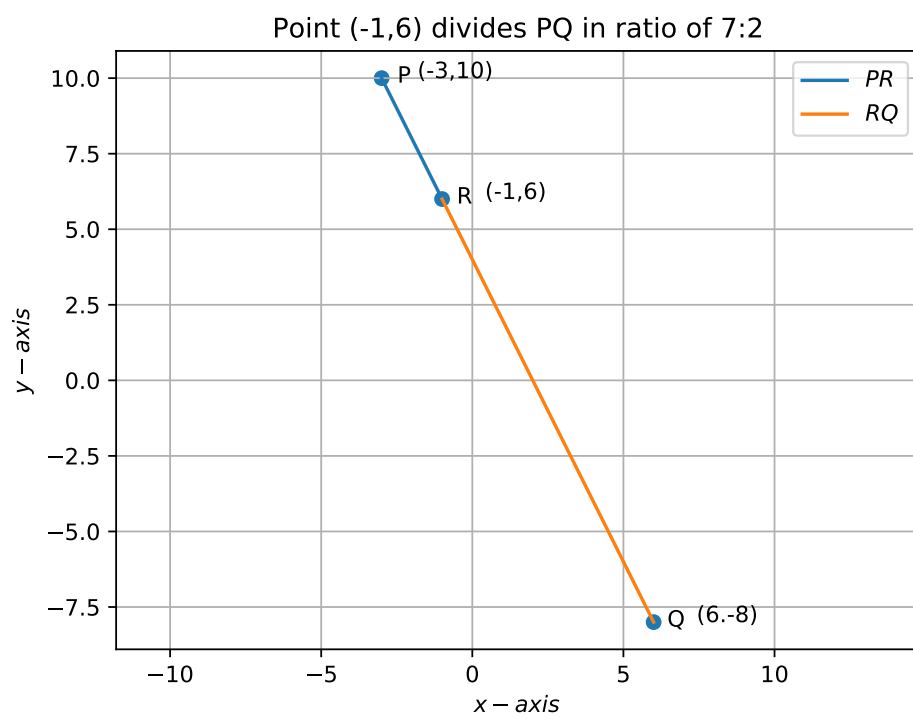


Figure 1