CHAPTER-7
COORDINATE GEOMETRY

Excercise 7.2

1. Find the coordinates of the point which divides the join $(-1, 7)$ and $(4, -3)$ in the ratio 2:3 :

Solution: The coordinates and ratio are given as:

$$\mathbf{P} = \begin{pmatrix} -1 \\ 7 \end{pmatrix} \tag{1}$$

$$\mathbf{Q} = \begin{pmatrix} 4 \\ -3 \end{pmatrix} \tag{2}$$

$$n = \frac{3}{2} \tag{3}$$

$$\mathbf{R} = \frac{\mathbf{Q} + n\mathbf{P}}{1+n} \tag{4}$$

$$= \frac{1}{1+\frac{3}{2}} \left(\begin{pmatrix} 4 \\ -3 \end{pmatrix} + \frac{3}{2} \begin{pmatrix} -1 \\ 7 \end{pmatrix} \right) \tag{5}$$

$$= \frac{1}{1+\frac{3}{2}} \left(\begin{pmatrix} 4 \\ -3 \end{pmatrix} + \begin{pmatrix} \frac{-3}{2} \\ \\ \frac{21}{2} \end{pmatrix} \right) \tag{6}$$

$$= \frac{1}{\frac{5}{2}} \begin{pmatrix} \frac{5}{2} \\ \\ \frac{15}{2} \end{pmatrix} \tag{7}$$

$$= \frac{2}{5} \begin{pmatrix} \frac{5}{2} \\ \\ \frac{15}{2} \end{pmatrix} \tag{8}$$

$$= \begin{pmatrix} 1 \\ \frac{15}{5} \end{pmatrix} \tag{9}$$

$$\mathbf{R} = \begin{pmatrix} 1 \\ 3 \end{pmatrix} \tag{10}$$

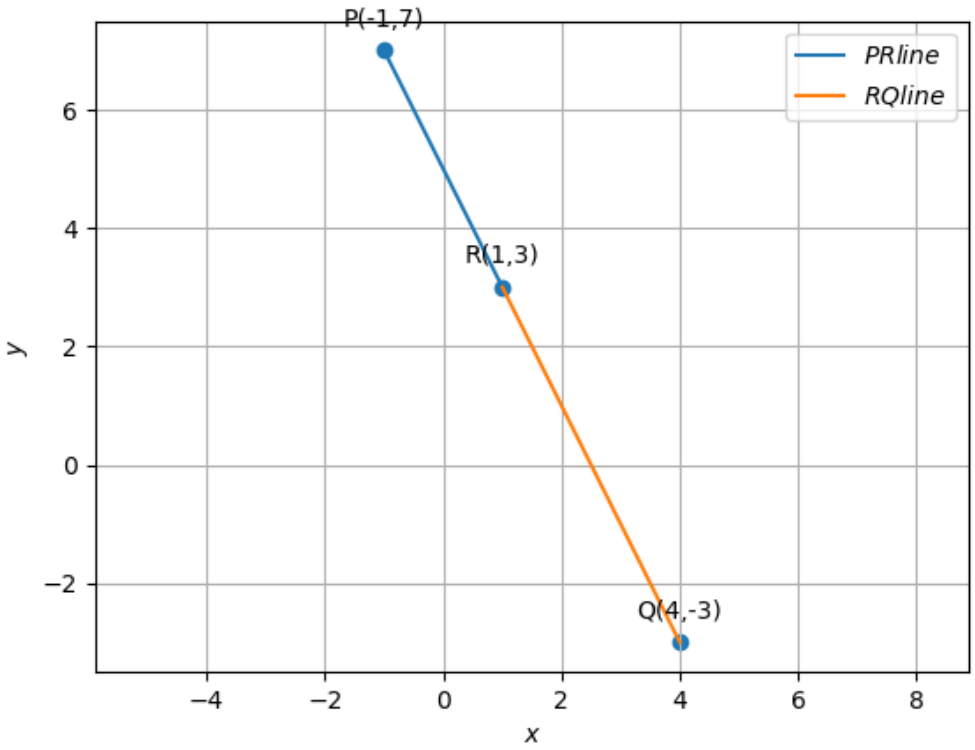

Figure 1: