VECTORS

1 10^{th} Maths - EXERCISE-7.2

1. Find the coordinates of the points of trisection of the line segment joining $(4,-1)$ and $(-2,-3)$

2 SOLUTION

Given points are

$$\mathbf{Q} = \begin{pmatrix} 4 \\ -1 \end{pmatrix}, \mathbf{P} = \begin{pmatrix} -2 \\ -3 \end{pmatrix} \tag{1}$$

The equation of the formula is

$$\mathbf{R} = \frac{\mathbf{Q} + n\mathbf{P}}{1+n} \tag{2}$$

Ratio 2:1 has taken

$$n = \frac{1}{2} \tag{3}$$

$$\mathbf{R} = \frac{\begin{pmatrix} 4 \\ -1 \end{pmatrix} + \frac{1}{2}\begin{pmatrix} -2 \\ -3 \end{pmatrix}}{1+\frac{1}{2}} \tag{4}$$

$$\frac{\begin{pmatrix} 4 \\ -1 \end{pmatrix} + \begin{pmatrix} -1 \\ -3/2 \end{pmatrix}}{\frac{3}{2}} \tag{5}$$

$$\frac{\mathbf{4-1}}{\frac{3}{2}}; \frac{\begin{pmatrix} -1 & -3/2 \end{pmatrix}}{\frac{3}{2}} \tag{6}$$

$$\mathbf{R} = \begin{pmatrix} 2 \\ -5/3 \end{pmatrix} \tag{7}$$

Ratio 1:2 has taken

$$n = 2 \tag{8}$$

$$\mathbf{S} = \frac{\begin{pmatrix} 4 \\ -1 \end{pmatrix} + 2\begin{pmatrix} -2 \\ -3 \end{pmatrix}}{1+2} \tag{9}$$

$$\frac{\begin{pmatrix} 4 \\ -1 \end{pmatrix} + \begin{pmatrix} -4 \\ -6 \end{pmatrix}}{3} \tag{10}$$

$$\frac{\mathbf{4-4}}{3}; \frac{\begin{pmatrix} -1 & +-6 \end{pmatrix}}{3} \tag{11}$$

$$\mathbf{S} = \begin{pmatrix} 0 \\ \frac{-7}{3} \end{pmatrix} \tag{12}$$

3 Figure

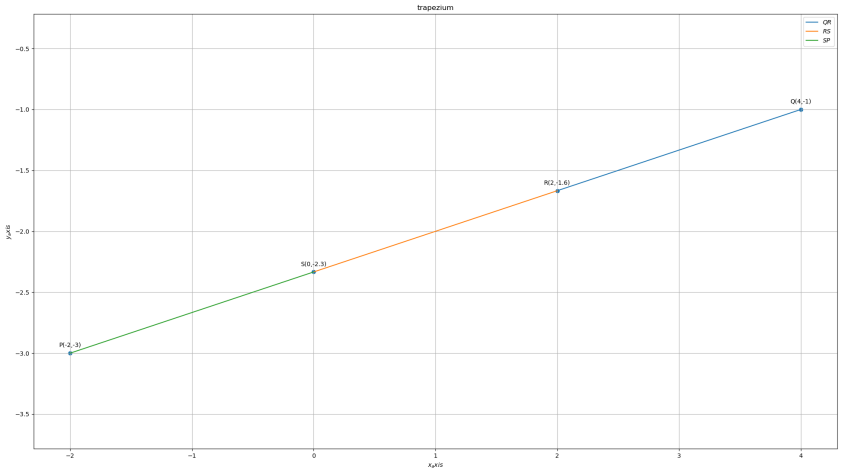

Figure 1: trisecton

https://github.com/prasaddeva287/FWC/tree/main/VECTOR–2/codes