

VECTORS

1 10th 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

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

The equation of the formula is

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

Ratio 2:1 has taken

$$n = \frac{1}{2} \quad (3)$$

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

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

$$\frac{4 - 1}{\frac{3}{2}}; \frac{\begin{pmatrix} -1 & -3/2 \end{pmatrix}}{\frac{3}{2}} \quad (6)$$

$$\mathbf{R} = \begin{pmatrix} 2 \\ -\frac{5}{3} \end{pmatrix} \quad (7)$$

Ratio 1:2 has taken

$$n = 2 \quad (8)$$

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

$$\frac{\begin{pmatrix} 4 \\ -1 \end{pmatrix} + \begin{pmatrix} -4 \\ -6 \end{pmatrix}}{3} \quad (10)$$

$$\frac{4 - 4}{3}; \frac{(-1) + (-6)}{3} \quad (11)$$

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

3 Figure

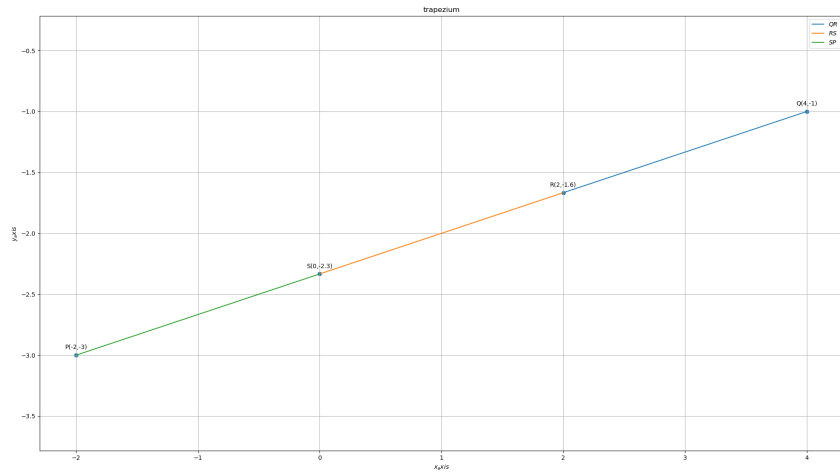


Figure 1: trisecton

<https://github.com/prasaddeva287/FWC/tree/main/VECTOR-2/codes>