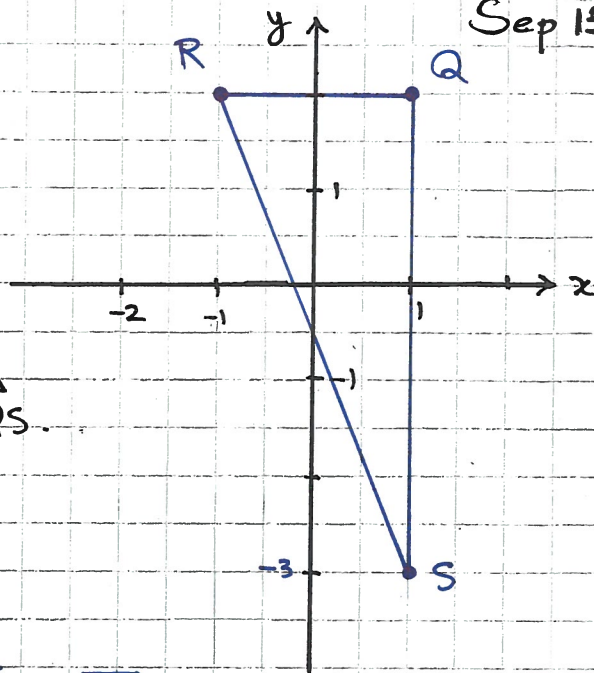


1. Find the points $R = (-1, 2)$,
 $Q = (1, 2)$ and $S = (1, -3)$
 on the given x - y plane.



2. Find the perimeter of the triangle $\triangle RQS$.

$$\text{Perimeter} = |\vec{RS}| + |\vec{QS}| + |\vec{RQ}|$$

$$|\vec{RS}| = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$= \sqrt{(1 - (-1))^2 + (-3 - 2)^2} = \sqrt{4 + 25} = \sqrt{29}$$

$$|\vec{RQ}| = \sqrt{(1 - (-1))^2 + (2 - 2)^2} = \sqrt{4} = 2, \quad |\vec{QS}| = 5$$

3. Find the slope of each line. $\rightarrow P = \sqrt{29} + 2 + 5 = \sqrt{29} + 7$

$$m_{RQ} = 0 \rightarrow \text{Horizontal line}$$

$$m_{RS} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-3 - 2}{1 - (-1)} = \frac{-5}{2}$$

$$m_{QS} = \text{undefined} \rightarrow \text{Vertical line}$$

4. Write the equation of the line passing through each two points.

$$RQ: y = 2 \rightarrow \text{Horizontal}$$

$$QS: x = 1 \rightarrow \text{Vertical}$$

$$RS: y - y_1 = m_{RS}(x - x_1) \xrightarrow[\text{choose } S]{\text{choose } R} y - (-3) = -\frac{5}{2}(x - 1)$$

$$y + 3 = -\frac{5}{2}x + \frac{5}{2}$$

$$\Rightarrow y = -\frac{5}{2}x + \frac{5}{2} - 3$$

$$\boxed{y = -\frac{5}{2}x - \frac{1}{2}}$$

5. Write the equation of the line perpendicular to \vec{RS} that passes through \textcircled{S} .

$$m_{RS} = -\frac{5}{2} \Rightarrow m_{\text{per}} = +\frac{2}{5} \Rightarrow y - (-3) = \frac{2}{5}(x - 1) \Rightarrow y + 3 = \frac{2}{5}x - \frac{2}{5}$$

$$S = (1, -3) \Rightarrow y = \frac{2}{5}x - \frac{2}{5} - 3 = \frac{2}{5}x - \frac{17}{5}$$

$$= \frac{-2 - 17}{5} = \frac{-19}{5}$$