Figure0

Assignment 1

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Download all python codes from

https://github.com/Ravalika/Matrix−Theory/tree/main/Assignment1/Codes

and latex-tikz codes from

https://github.com/Ravalika/Matrix−Theory/tree/main/Assignment1

1 Question No. 2.12

Draw$\triangle PQR$ with PQ=4cm,QR=3.5cm,PR=4cm.what type of triangle is this?

2 solution

Let us assume that:

$$\mathbf{Q} = \begin{pmatrix} 0 \\ 0 \end{pmatrix}, \mathbf{P} = \begin{pmatrix} 0 \\ 4 \end{pmatrix}, \mathbf{R} = \begin{pmatrix} 3.5 \\ 0 \end{pmatrix} \tag{2.0.1}$$

Then,

$$\mathbf{PQ} = \|\mathbf{P} - \mathbf{Q}\|^2 = \|\mathbf{P}\|^2 = 4^2 = 16 \quad (\because \mathbf{Q} = 0) \tag{2.0.2}$$

$$\mathbf{QR} = \|\mathbf{R} - \mathbf{Q}\|^2 = \|\mathbf{R}\|^2 = 12.2 \quad (\because \mathbf{Q} = 0) \tag{2.0.3}$$

$$\mathbf{PR} = \|\mathbf{P} - \mathbf{R}\|^2 = 4^2 = 16 \tag{2.0.4}$$

(2.0.5)

Here

$$\mathbf{PQ} = \mathbf{PR} \tag{2.0.6}$$

Two sides are equal.so $\triangle PQR$ is isosceles right angle triangle.

So,the vertices of $\triangle PQR$ in fig. **??** are:

$$\mathbf{P} = \begin{pmatrix} 0 \\ 4 \end{pmatrix}, \mathbf{Q} = \begin{pmatrix} 0 \\ 0 \end{pmatrix}, \mathbf{R} = \begin{pmatrix} 3.5 \\ 0 \end{pmatrix} \tag{2.0.7}$$

Lines PQ ,QR and PR are then generated and plotted using these coordinates to form isosceles $\triangle PQR$. Plot of the right angle $\triangle PQR$:

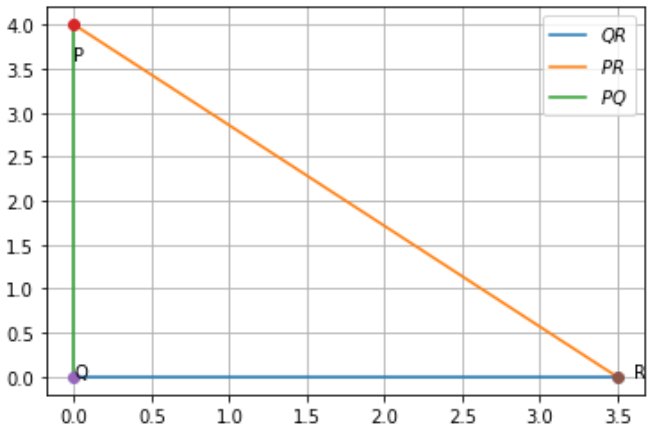

Fig. 2.1: isosceles $\triangle PQR$

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