Assignment 1

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Download all python codes from

https://github.com/Gayathri1729/Assignment1

and latex-tikz codes from

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1 CONSTR-2.27 Part2

Construct $\triangle PQR$ with: $\angle$Q = 30°,$\angle$R = 60° and QR=4.7.

2 EXPLANATION

Given , $\angle$Q=30°,$\angle$R=60°, QR=4.7.
Note that,

$$\angle P = 180^\circ - (\angle Q + \angle R) = 90^\circ \tag{2.0.1}$$

That is,the $\triangle PQR$ is a right angled triangle.Let QR=p and θ=30°. Then the sides of the triangle can be obtained by

$$PQ = p\cos\theta \tag{2.0.2}$$
$$PR = p\sin\theta \tag{2.0.3}$$

Then the vertices of the triangle are

$$\mathbf{P} = \begin{pmatrix} 0 \\ 0 \end{pmatrix} \tag{2.0.4}$$
$$\mathbf{Q} = \begin{pmatrix} 0 \\ p\cos\theta \end{pmatrix} \tag{2.0.5}$$
$$= \begin{pmatrix} 0 \\ 4.7\cos 30 \end{pmatrix} \tag{2.0.6}$$
$$= \begin{pmatrix} 0 \\ 4.07 \end{pmatrix} \tag{2.0.7}$$
$$\mathbf{R} = \begin{pmatrix} p\sin\theta \\ 0 \end{pmatrix} \tag{2.0.8}$$
$$= \begin{pmatrix} 4.7\sin 30 \\ 0 \end{pmatrix} \tag{2.0.9}$$
$$= \begin{pmatrix} 2.35 \\ 0 \end{pmatrix} \tag{2.0.10}$$

Knowing all the vertices ,now we can construct the triangle.

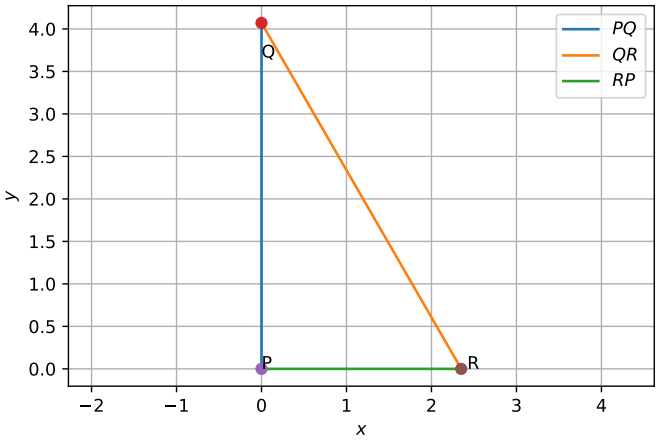

Fig. 2.1: $\triangle PQR$ constructed using python