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: $\angle Q = 30^{\circ}, \angle R = 60^{\circ}$ and QR=4.7.

2 EXPLANATION

Given , $\angle Q=30^{\circ}$, $\angle R=60^{\circ}$, QR=4.7. Note that,

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

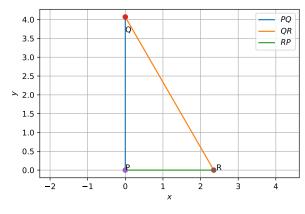


Fig. 2.1: $\triangle PQR$ constructed using python