

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,

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

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

$$PQ = p \cos \theta \quad (2.0.2)$$

$$PR = p \sin \theta \quad (2.0.3)$$

Then the vertices of the triangle are

$$\mathbf{P} = \begin{pmatrix} 0 \\ 0 \end{pmatrix} \quad (2.0.4)$$

$$\mathbf{Q} = \begin{pmatrix} 0 \\ p \cos \theta \end{pmatrix} \quad (2.0.5)$$

$$= \begin{pmatrix} 0 \\ 4.7 \cos 30 \end{pmatrix} \quad (2.0.6)$$

$$= \begin{pmatrix} 0 \\ 4.07 \end{pmatrix} \quad (2.0.7)$$

$$\mathbf{R} = \begin{pmatrix} p \sin \theta \\ 0 \end{pmatrix} \quad (2.0.8)$$

$$= \begin{pmatrix} 4.7 \sin 30 \\ 0 \end{pmatrix} \quad (2.0.9)$$

$$= \begin{pmatrix} 2.35 \\ 0 \end{pmatrix} \quad (2.0.10)$$

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

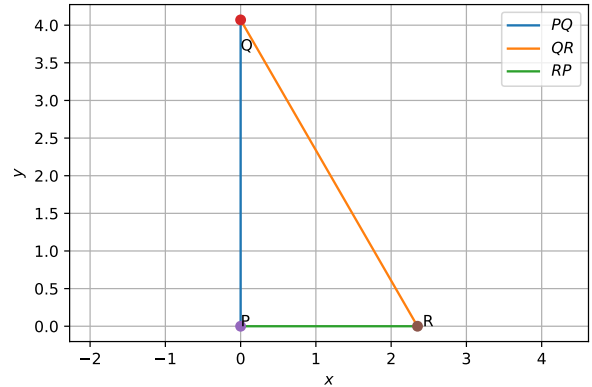


Fig. 2.1: $\triangle PQR$ constructed using python