Assignment 1

Kavya Kamal

Download all python codes from

https://github.com/kavyakamal66/IITH–INTERNSHIP/blob/main/Assignment%201/code1.py

and latex-tikz codes from

https://github.com/kavyakamal66/IITH–INTERNSHIP/blob/main/Assignment%201/latex1.tex

1 Question No. 2.14

Construct $\triangle PQR$ given that $PQ = 3$, $QR = 5.5$ and $\angle PQR = 60^\circ$

2 Solution

$$Given, PQ = 3, QR = 5.5, \angle PQR = 60^\circ \tag{2.0.1}$$

$$Let, PQ = r, QR = p \tag{2.0.2}$$

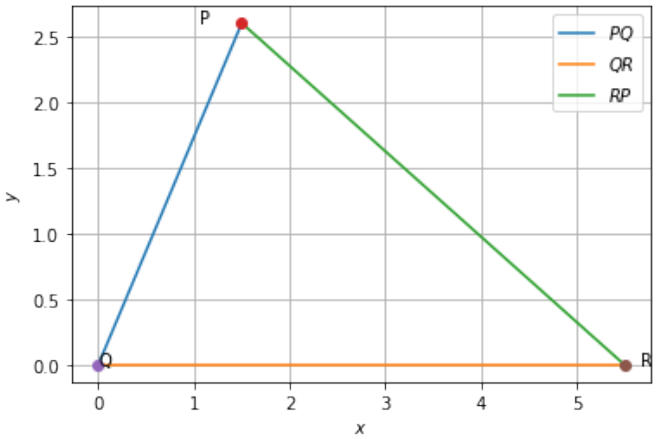

Fig. 0: The Constructed triangle

The vertex P can be expressed in polar coordinate form as:

$$\mathbf{P} = r\begin{pmatrix}\cos Q\\ \sin Q\end{pmatrix}, \mathbf{Q} = \begin{pmatrix}0\\0\end{pmatrix}, \mathbf{R} = \begin{pmatrix}p\\0\end{pmatrix} \tag{2.0.3}$$

This can be written as,

$$\mathbf{P} = 3\begin{pmatrix}\cos 60\\ \sin 60\end{pmatrix} = \begin{pmatrix}1.5\\ (3\sqrt{3})/2\end{pmatrix}, \mathbf{Q} = \begin{pmatrix}0\\0\end{pmatrix}, \mathbf{R} = \begin{pmatrix}5.5\\0\end{pmatrix} \tag{2.0.4}$$

The values of P, Q and R are substituted and the triangle is plotted as given above.