Assignment-1

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Download all python codes from

https://github.com/Kumarbegnier/IIT−HYD−INTERNSHIP/tree/main/ASSIGNMENT%201/code

and latex-tikz codes from

https://github.com/Kumarbegnier/IIT−HYD−INTERNSHIP/blob/main/ASSIGNMENT%201/Latex.tex

1 Question No. 2.18

Construct $\triangle XYZ$ given that XY=6$\angle X = 30°$ and $\angle Y = 100°$

2 Solution

$$Given, XY = 6\angle X = 30°\angle Y = 100° \tag{2.0.1}$$

Angle Sum Property

$$\angle Z° = \angle 180° - \angle X° + \angle Y° \tag{2.0.2}$$

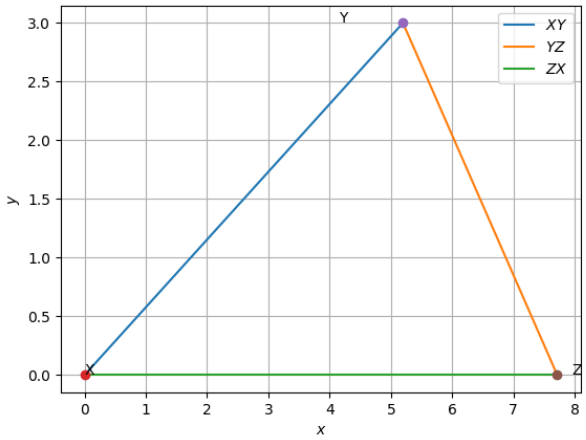

Fig. 0: OUTPUT FIGURE

Let,

$$\mathbf{X} = \begin{pmatrix}0\\0\end{pmatrix} \mathbf{Y} = \begin{pmatrix}p\\q\end{pmatrix} \mathbf{Z} = \begin{pmatrix}y\\0\end{pmatrix} \tag{2.0.3}$$

the vertex of Y(p,q) can be expressed in polar coordinate.
This can be written as,

$$\mathbf{X} = \begin{pmatrix}0\\0\end{pmatrix} \tag{2.0.4}$$

$$\mathbf{Y} = 6\begin{pmatrix}\cos\angle X°\\ \sin\angle X°\end{pmatrix} = 6\begin{pmatrix}\cos 30\\ \sin 30\end{pmatrix} = \begin{pmatrix}3\sqrt{3}\\ 3\end{pmatrix}, \tag{2.0.5}$$

$$\mathbf{Z} = \begin{pmatrix} P + (q/tan\angle Z°)\\ 0\end{pmatrix} = \begin{pmatrix}3\sqrt{3} + (3/\tan 50)\\ 0\end{pmatrix} \tag{2.0.6}$$