

Assignment-1

NEERAJ KUMAR

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 $XY=6$ $\angle X = 30^\circ$ and $\angle Y = 100^\circ$

2 SOLUTION

$$\text{Given, } XY = 6, \angle X = 30^\circ, \angle Y = 100^\circ \quad (2.0.1)$$

$$XY = z, YZ = x, XZ = y \quad (2.0.2)$$

Angle Sum Property

$$\angle Z^\circ = 180^\circ - \angle X^\circ + \angle Y^\circ \quad (2.0.3)$$

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

$$\mathbf{X} = \begin{pmatrix} 0 \\ 0 \end{pmatrix} \mathbf{Y} = \begin{pmatrix} p \\ q \end{pmatrix} \mathbf{Z} = \begin{pmatrix} y \\ 0 \end{pmatrix} \quad (2.0.4)$$

This can be written as,

$$\mathbf{X} = \begin{pmatrix} 0 \\ 0 \end{pmatrix} \quad (2.0.5)$$

$$\mathbf{Y} = 6 \begin{pmatrix} \cos 30^\circ \\ \sin 30^\circ \end{pmatrix} = \begin{pmatrix} 3\sqrt{3} \\ 3 \end{pmatrix}, \quad (2.0.6)$$

$$\mathbf{Z} = \begin{pmatrix} P + (q/\tan\theta) \\ 0 \end{pmatrix} = \begin{pmatrix} 3\sqrt{3} + (3/\tan 50^\circ) \\ 0 \end{pmatrix} \quad (2.0.7)$$

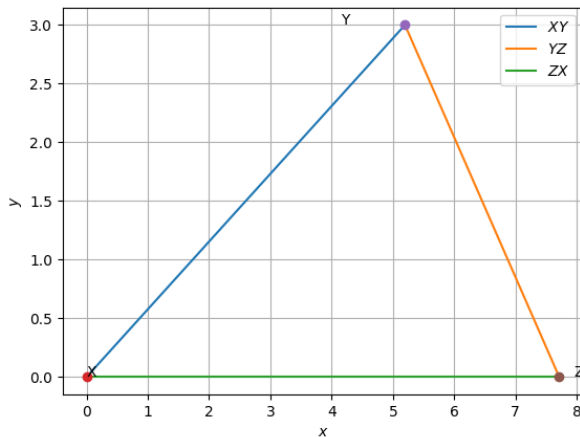


Fig. 0: OUTPUT FIGURE