Assignment-1

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Download all python codes from

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

and latex-tikz codes from

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

1 Question No. 2.18

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

2 Solution

Given $XY = 6$, $\angle X = 30°$ and $\angle Y = 100°$
$XY = c$, $YZ = a$, $XZ = b$
Let,
"YD" is a line perpendicular intersect to the line XZ which divide into two part $XZ = XD + DZ$
Let,$YD = q$ and $XD = q$

The vertex X,Y and Z can be expressed in polar coordinate form as:

$$\mathbf{X} = \begin{pmatrix} 0 \\ 0 \end{pmatrix} \mathbf{Y} = \begin{pmatrix} p \\ q \end{pmatrix} \mathbf{Z} = \begin{pmatrix} b \\ 0 \end{pmatrix} \tag{2.0.1}$$

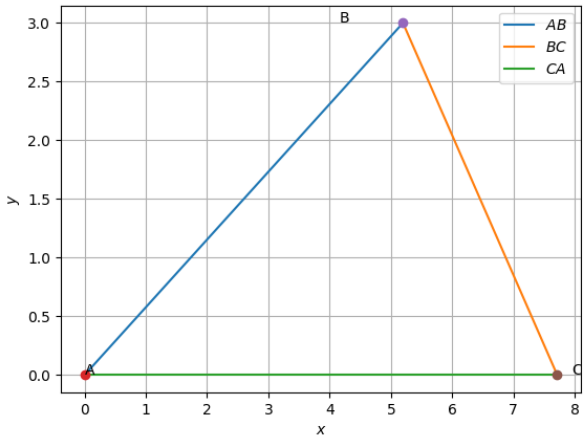

Fig. 0: OUTPUT FIGURE

This can be written as,

$$\mathbf{Y} = 6\begin{pmatrix} \cos 30 \\ \sin 30 \end{pmatrix} = \begin{pmatrix} 3\sqrt{3} \\ 3 \end{pmatrix}, \tag{2.0.2}$$

$$\mathbf{X} = \begin{pmatrix} 0 \\ 0 \end{pmatrix} \tag{2.0.3}$$

$$\mathbf{Z} = \begin{pmatrix} P + (q/tan\theta) \\ 0 \end{pmatrix} = \begin{pmatrix} 3\sqrt{3} + (3/\tan 50) \\ 0 \end{pmatrix} \tag{2.0.4}$$

These values of A, B and C are substituted with respect to X, Y and Z the triangle in code.