

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

2 SOLUTION

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

$XY = c$, $YZ = a$, $XZ = b$

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:

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

This can be written as,

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

$$\mathbf{X} = \begin{pmatrix} 0 \\ 0 \end{pmatrix} \quad (2.0.3)$$

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

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

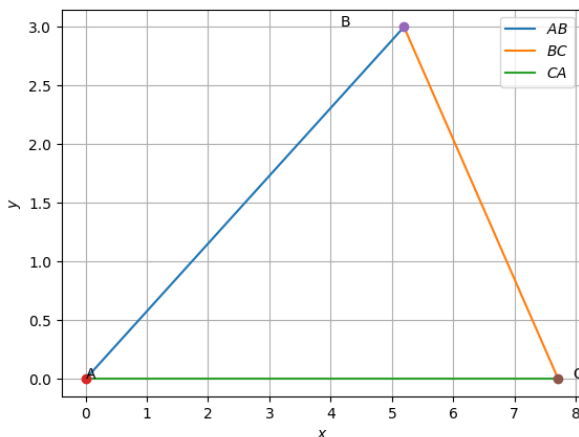


Fig. 0: OUTPUT FIGURE