Assignment 1

K.NIKHITHA

Download all python codes from

https://https://github.com/K.NIKHITHA/Assignment1/blob/main/assignment1.py

and latex-tikz codes from

https://https://github.com/K.NIKHITHA/Assignment1/blob/main/main.tex

1 Question No.2.8

In $\triangle ABC$, $a = 6, \angle B = 60^\circ$ and $b - c = 2$. Sketch $\triangle ABC$.

2 SOLUTION

The vertex **A** can be expressed in *polar coordinate form* as

$$\mathbf{A} = c\begin{pmatrix}\cos\theta\\ \sin\theta\end{pmatrix}, \mathbf{B} = \begin{pmatrix}0\\0\end{pmatrix}, \mathbf{C} = \begin{pmatrix}a\\0\end{pmatrix}, \tag{2.0.1}$$

where

$$c = \sqrt{a^2 + b^2}, \theta = 60^\circ \tag{2.0.2}$$

Therefore,

$$c^2 = a^2 + b^2 \tag{2.0.3}$$

$$c^2 = 6^2 + (c+2)^2 \quad (\because b - c = 2) \tag{2.0.4}$$

$$c = 10 \tag{2.0.5}$$

so,the vertices of $\triangle ABC$ are

$$\mathbf{A} = 10\begin{pmatrix}\cos 60\\ \sin 60\end{pmatrix} = \begin{pmatrix}5\\8.66\end{pmatrix}, \mathbf{B} = \begin{pmatrix}0\\0\end{pmatrix}, \mathbf{C} = \begin{pmatrix}6\\0\end{pmatrix} \tag{2.0.6}$$

plot the$\triangle ABC$