Assignment 1

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Download all python codes from

https://github.com/BatharajuRamana/Assignment1/blob/main/Assignment1/assignment1.py

and latex-tikz codes from

https://github.com/BatharajuRamana/Assignment1/blob/main/Assignment1/main.tex

1 Question No. 2.20

Drawa$\triangle ABC$ with side $\angle B = 30^{\circ}$, $\angle A = 60^{\circ}$,AB= 5.8.

2 Explanation

Given,

$$\angle A = 60^{\circ}, \angle B = 30^{\circ} and \text{AB} = 5.8 \tag{2.0.1}$$

we first need to find $\angle C$: Finding $\angle C$ In $\triangle ABC$,

$$\angle A + \angle B + \angle C = 180^{\circ} \tag{2.0.2}$$
$$60^{\circ} + 30^{\circ} + \angle C = 180^{\circ} \tag{2.0.3}$$
$$\angle C = 180^{\circ} - 90^{\circ} \tag{2.0.4}$$
$$\angle C = 90^{\circ} \tag{2.0.5}$$

That is,the $\triangle ABC$ is a right angled. let AB=c and $\angle B = 30^{\circ}$ Then the sides of the triangle can be obtained by

$$BC = c\cos B \tag{2.0.6}$$
$$AC = c\sin B \tag{2.0.7}$$

Now, vertices of given $\triangle ABC$ can be written as,

$$\mathbf{A} = \begin{pmatrix} 0 \\ c\sin B \end{pmatrix} \tag{2.0.8}$$
$$= \begin{pmatrix} 0 \\ 5.8\sin 30 \end{pmatrix} \tag{2.0.9}$$
$$= \begin{pmatrix} 0 \\ 2.9 \end{pmatrix} \tag{2.0.10}$$
$$\mathbf{B} = \begin{pmatrix} c\cos B \\ 0 \end{pmatrix} \tag{2.0.11}$$
$$= \begin{pmatrix} 5.8\cos 30 \\ 0 \end{pmatrix} \tag{2.0.12}$$
$$= \begin{pmatrix} 5.02294 \\ 0 \end{pmatrix} \tag{2.0.13}$$
$$\mathbf{C} = \begin{pmatrix} 0 \\ 0 \end{pmatrix} \tag{2.0.14}$$

Now,$\triangle ABC$ can be plotted using vertices a ,b and c Plot of the angle $\triangle ABC$:

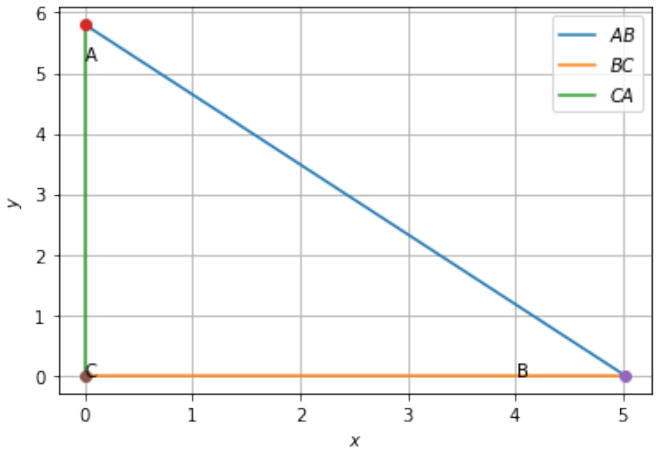

Fig. 2.1: $\triangle ABC$