Assignment 1

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1 QUESTION No. 2.20

Draw a $\triangle ABC$ with side $\angle B = 30°$, $\angle A = 60°$, AB = 5.8.

2 EXPLANATION

Given,

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

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

$$\angle A + \angle B + \angle C = 180° \tag{2.0.2}$$

$$60° + 30° + \angle C = 180° \tag{2.0.3}$$

$$\angle C = 180° - 90° \tag{2.0.4}$$

$$\angle C = 90° \tag{2.0.5}$$

That is, the $\triangle ABC$ is a right angled. let AB=c and $\theta = 30°$ Then the sides of the triangle can be obtained by

$$BC = c \cos \theta \tag{2.0.6}$$

$$AC = c \sin \theta \tag{2.0.7}$$

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

$$\mathbf{A} = \begin{pmatrix} 0 \\ c \sin \theta \end{pmatrix} \tag{2.0.8}$$

$$= \begin{pmatrix} 0 \\ 5.8 \sin 30 \end{pmatrix} \tag{2.0.9}$$

$$= \begin{pmatrix} 0 \\ 2.9 \end{pmatrix} \tag{2.0.10}$$

$$\mathbf{B} = \begin{pmatrix} c \cos \theta \\ 0 \end{pmatrix} \tag{2.0.11}$$

$$= \begin{pmatrix} 5.8 \cos 30 \\ 0 \end{pmatrix} \tag{2.0.12}$$

$$= \begin{pmatrix} 5.02294 \\ 0 \end{pmatrix} \tag{2.0.13}$$

$$\mathbf{C} = \begin{pmatrix} 0 \\ 0 \end{pmatrix} \tag{2.0.14}$$

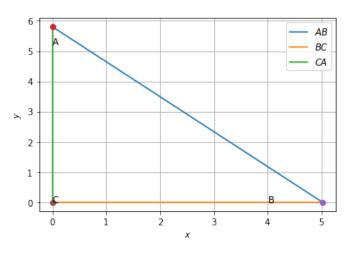Now, $\triangle ABC$ can be plotted using vertices a ,b and c Plot of the angle $\triangle ABC$:

Fig. 2.1: $\triangle ABC$