ASSIGNMENT-1

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1 QUESTION NO-2.27

Construct $\triangle ABC$ such that $AC = 3, \angle A = 70°$ and $\angle B = 50°$.

2 Solution

To find angle C:

$$\angle A + \angle B + \angle C = 180° \tag{2.0.1}$$
$$\angle C = 180° - 120° \tag{2.0.2}$$
$$= 60° \tag{2.0.3}$$

Now we shall find the side c by using the formula

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c} \tag{2.0.4}$$

To find side c

$$c = b\frac{\sin C}{\sin B} \tag{2.0.5}$$
$$= 3\frac{\sin 60°}{\sin 50°} \tag{2.0.6}$$
$$= 3.3915 \tag{2.0.7}$$

The vertices of $\triangle ABC$ are

$$\mathbf{A} = \begin{pmatrix} 0 \\ 0 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} c\cos 70° \\ c\sin 70° \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 3 \\ 0 \end{pmatrix} \tag{2.0.8}$$

Lines AB,BC,CA are then generated and plotted using these coordinates to construct $\triangle ABC$
Plot of the $\triangle ABC$

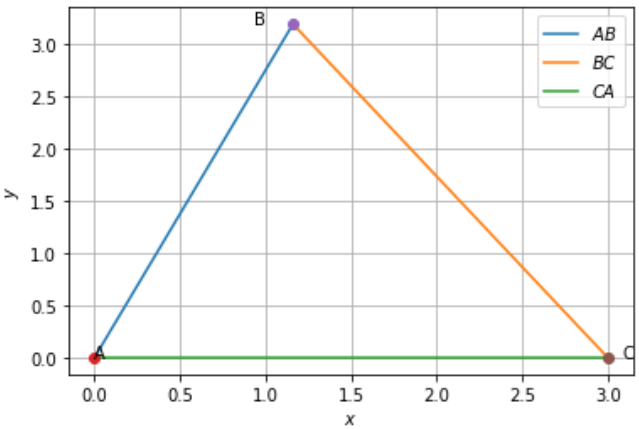

Fig. 2.1: Plot of $\triangle ABC$