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# **ASSIGNMENT-1**

# **R.YAMINI**

## 1 QUESTION NO-2.27

Construct  $\triangle ABC$  such that  $AC = 3, \angle A = 70^{\circ}$  and  $\angle B$  $= 50^{\circ}$ .

### 2 Solution

To find angle C:

$$\angle A + \angle B + \angle C = 180^{\circ} \tag{2.0.1}$$

$$\angle C = 180^{\circ} - 120^{\circ}$$
 (2.0.2)

$$=60^{\circ}$$
 (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

$$c = b \frac{\sin C}{\sin B}$$
 (2.0.5)  
=  $3 \frac{\sin 60^{\circ}}{\sin 50^{\circ}}$  (2.0.6)

$$= 3 \frac{\sin 60^{\circ}}{\sin 50^{\circ}}$$
 (2.0.6)

$$= 3.3915$$
 (2.0.7)

The vertices of  $\triangle ABC$  are

$$\mathbf{A} = \begin{pmatrix} 0 \\ 0 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} c \cos 70^{\circ} \\ c \sin 70^{\circ} \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 3 \\ 0 \end{pmatrix}$$
 (2.0.8)

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

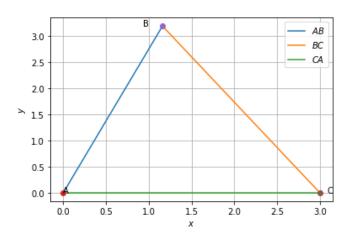


Fig. 2.1: Plot of  $\triangle ABC$