

# 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:

$$\angle A + \angle B + \angle C = 180^\circ \quad (2.0.1)$$

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

$$= 60^\circ \quad (2.0.3)$$

Now we shall find the side  $c$  by using the formula

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c} \quad (2.0.4)$$

To find side  $c$

$$c = b \left( \frac{\sin C}{\sin B} \right) \quad (2.0.5)$$

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

$$= 3.3915 \quad (2.0.7)$$

The vertices of  $\triangle ABC$  are

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

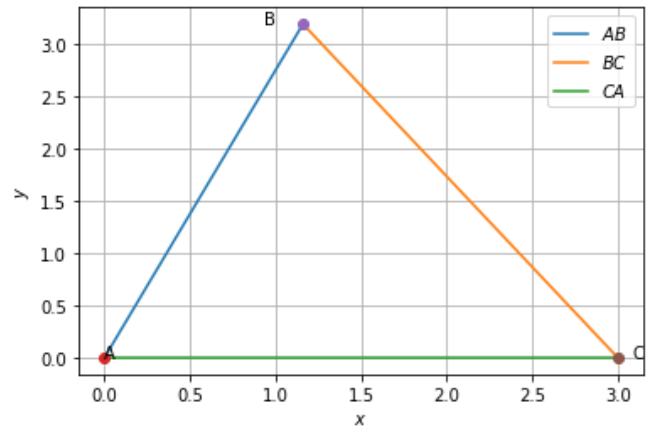


Fig. 2.1: Plot of  $\triangle ABC$

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

Plot of the  $\triangle ABC$