3.3.3.6

EE24BTECH11059 - Yellanki Siddhanth

Question:

Construct a triangle ABC with side BC = 6cm, $B = \angle 45°$, $A = \angle 105°$

Solution:

Variable	Description	Formula
a	Length BC	$a = 6$
c	Length AB	$c = \frac{a}{\cos A + \frac{\sin B}{\sin C} + \cos C}$
A	A Point to be plotted	$A = \begin{pmatrix} c\sin C \\ c\cos C \end{pmatrix}$
B	A Point to be plotted	$B = \begin{pmatrix} 0 \\ 0 \end{pmatrix}$
C	A Point to be plotted	$C = \begin{pmatrix} a \\ 0 \end{pmatrix}$

TABLE 0

We know that $\angle A + \angle B + \angle C = 180°$.

$$\angle C = 180 - \angle A - \angle B = 30° \tag{0.1}$$

Steps to construct the triangle are:

1) Draw a line segment BC of length $6cm$ using a ruler.
2) At point B construct $\angle XBC$ of measure 45°.
3) At point C construct $\angle YCB$ of measure 30°
4) Extend BX and CY and label their point of intersection as A.

ΔABC is the required triangle.

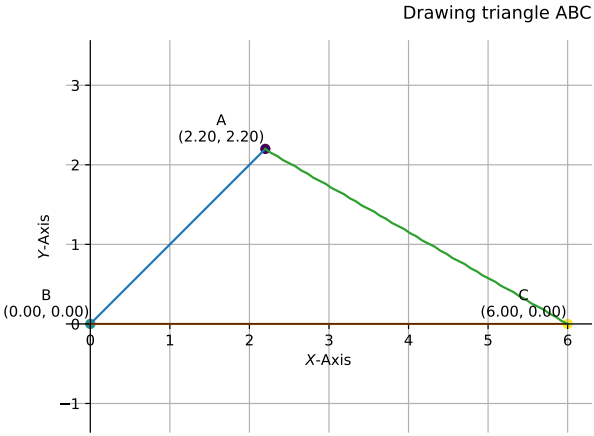

Fig. 4.1: Triangle ABC where $BC = 6cm$, $\angle B = 45°$ and $\angle A = 105°$