3-3.2-6

EE24BTECH11010 - Balaji

Question :
Draw a right triangle ABC in which $BC = 12$cm, $AB = 5$cm and $\angle B = 90°$.
Solution:

Variable	Description	Value
a	Length of BC	$12cm$
b	Length of AC	?
c	Length of AB	$5cm$
$\angle ABC$	Angle B	$90°$

TABLE 0

Using cosine rule, we can find the length of AB, i.e., **b**:

$$b^2 = a^2 + c^2 - 2ac\cos B \tag{1}$$
$$b^2 = 12^2 + 5^2 - 120\cos 90° \tag{2}$$

On solving, we get **b** as:

$$\mathbf{b} = 13cm \tag{3}$$

The coordinates of $\triangle ABC$ can then be expressed as

$$\mathbf{A} = c\begin{pmatrix}\cos B\\ \sin B\end{pmatrix}, \mathbf{B} = \begin{pmatrix}0\\0\end{pmatrix}, \mathbf{C} = \begin{pmatrix}a\\0\end{pmatrix} \tag{4}$$
$$\therefore \mathbf{A} = 5\begin{pmatrix}\cos 90°\\ \sin 90°\end{pmatrix}, \mathbf{B} = \begin{pmatrix}0\\0\end{pmatrix}, \mathbf{C} = \begin{pmatrix}12\\0\end{pmatrix} \tag{5}$$

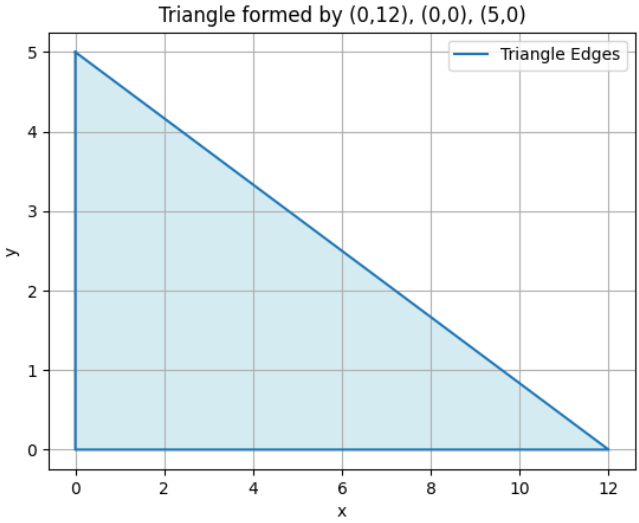
Triangle formed by (0,12), (0,0), (5,0)
Triangle Edges
y
x
0
1
2
3
4
5
0
2
4
6
8
10
12

Fig. 0.1