

3 - Constructions

EE1030:Matrix Theory

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Question:3.3.14

Construct a right triangle in which the sides, (other than the hypotenuse) are of length 6 cm and 8 cm. (10, 2012)

Solution:

Actual Name	Assigned Variable	Given values
AB	c	6 cm
BC	a	8 cm
$\angle ABC$	$\angle B$	90°

Table 3.3.14.1 0: Variables and its values

Let $AB = 6$ cm and $BC = 8$ cm.

Consider the right angle at \mathbf{B} , so that $\angle B = 90^\circ$, $\cos(\angle B) = 0$, $\sin(\angle B) = 1$

In $\triangle ABC$, if \mathbf{B} is considered as origin then the coordinates are represented by

$$\mathbf{A} = c \begin{pmatrix} \cos(\angle B) \\ \sin(\angle B) \end{pmatrix} \quad (0.1)$$

$$\mathbf{A} = \begin{pmatrix} 0 \\ c \end{pmatrix} \quad (0.2)$$

$$\mathbf{B} = \begin{pmatrix} 0 \\ 0 \end{pmatrix} \quad (0.3)$$

$$\mathbf{C} = \begin{pmatrix} a \\ 0 \end{pmatrix} \quad (0.4)$$

Therefore the coordinates of \mathbf{A} , \mathbf{B} , \mathbf{C} are

$$\mathbf{A} = \begin{pmatrix} 0 \\ 6 \end{pmatrix} \quad (0.5)$$

$$\mathbf{B} = \begin{pmatrix} 0 \\ 0 \end{pmatrix} \quad (0.6)$$

$$\mathbf{C} = \begin{pmatrix} 8 \\ 0 \end{pmatrix} \quad (0.7)$$

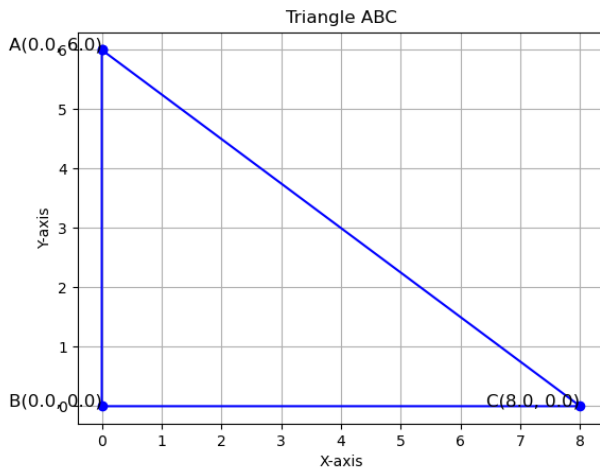


Fig. 0.1: Triangle ABC