1-1.3-1

AI24BTECH11018 - Sreya

Problem: In triangle ABC, if $\overrightarrow{BA} = 2\mathbf{a}$ and $\overrightarrow{BC} = 3\mathbf{b}$, find $\overrightarrow{AC}$.
Solution:

Vector	Expression
$\overrightarrow{BA}$	$\begin{bmatrix} 2.00 \\ 1.00 \end{bmatrix}$
$\overrightarrow{BC}$	$\begin{bmatrix} 3.00 \\ 2.00 \end{bmatrix}$
$\overrightarrow{AC}$	$\begin{bmatrix} 1.00 \\ 1.00 \end{bmatrix}$

TABLE 0: Input parameters

$$\implies \overrightarrow{AC} = \overrightarrow{AB} + \overrightarrow{BC},$$
$$\implies \overrightarrow{BA} = 2\mathbf{a},$$
$$\implies \overrightarrow{AB} = -\overrightarrow{BA} = -2\mathbf{a},$$
$$\implies \overrightarrow{BC} = 3\mathbf{b},$$
$$\implies \overrightarrow{AC} = -2\mathbf{a} + 3\mathbf{b}.$$

Therefore, the vector $\overrightarrow{AC}$ is:

$$\overrightarrow{AC} = 3\mathbf{b} - 2\mathbf{a}.$$

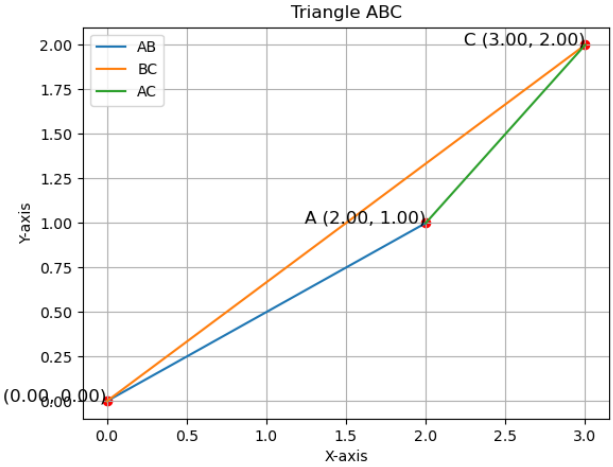

Fig. 0.1: Triangle