2.7.31

EE25BTECH11019 - Darji Vivek M.

Question:
Find the area of triangle ABC, whose vertices are $A(2,5)$, $B(4,7)$, and $C(6,2)$. $(12,2018)$

Solution:

Variable	Description
$\mathbf{A}$	Vertex $(2,5)$
$\mathbf{B}$	Vertex $(4,7)$
$\mathbf{C}$	Vertex $(6,2)$

TABLE 0: Given points

$$\mathbf{A} = \begin{pmatrix} 2 \\ 5 \end{pmatrix}, \quad \mathbf{B} = \begin{pmatrix} 4 \\ 7 \end{pmatrix}, \quad \mathbf{C} = \begin{pmatrix} 6 \\ 2 \end{pmatrix} \tag{1}$$

$$\mathbf{A} - \mathbf{B} = \begin{pmatrix} -2 \\ -2 \end{pmatrix}, \quad \mathbf{A} - \mathbf{C} = \begin{pmatrix} -4 \\ 3 \end{pmatrix} \tag{2}$$

$$(ABC) = \frac{1}{2} \left\| (\mathbf{A} - \mathbf{B}) \times (\mathbf{A} - \mathbf{C}) \right\| = 7 \tag{3}$$

Hence, the area of $\triangle ABC$ is **7**.

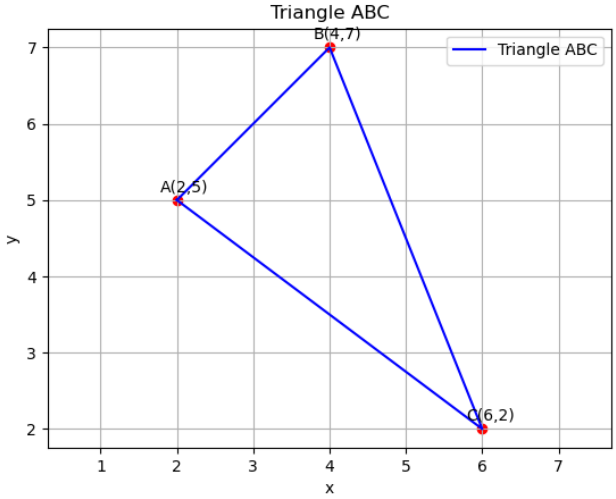

Fig. 0.1: Triangle *ABC* with vertices A(2,5), B(4,7), C(6,2)