2.7.22

EE25BTECH11010 - Arsh Dhoke

Question:
The area of a triangle whose vertices are (5,0), (8,0), (8,4) (in sq.units) is
Solution:

Variable	Description
A	Vertex $(5,0)$
B	Vertex $(8,0)$
C	Vertex $(8,4)$

TABLE 0: Given points

$$\mathbf{A} = \begin{pmatrix}5\\0\end{pmatrix}, \quad \mathbf{B} = \begin{pmatrix}8\\0\end{pmatrix}, \quad \mathbf{C} = \begin{pmatrix}8\\4\end{pmatrix} \tag{0.1}$$

$$\mathbf{A}-\mathbf{B} = \begin{pmatrix}-3\\0\end{pmatrix}, \quad \mathbf{A}-\mathbf{C} = \begin{pmatrix}-3\\-4\end{pmatrix} \tag{0.2}$$

$$(ABC) = \frac{1}{2}\left\|(\mathbf{A}-\mathbf{B})\times(\mathbf{A}-\mathbf{C})\right\| = 6 \tag{0.3}$$

Hence, the area of $\triangle ABC$ is **6**.

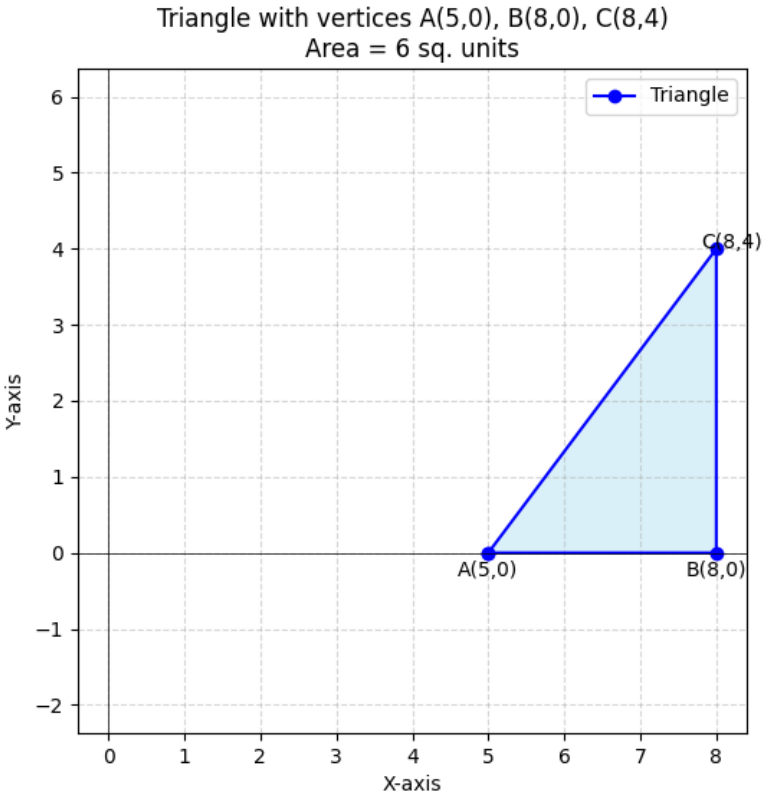
Triangle with vertices A(5,0), B(8,0), C(8,4)
Area = 6 sq. units
Triangle
C(8,4)
A(5,0)
B(8,0)
Y-axis
X-axis
6
5
4
3
2
1
0
−1
−2
0
1
2
3
4
5
6
7
8

Fig. 0.1: Graph