

# 2.6.18

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**Question:**

Find the area of region bounded by the triangle whose vertices are  $(-1, 0)$ ,  $(1, 3)$  and  $(3, 2)$ .

**Solution:**

Variable	Formula
$A$	$A = \begin{pmatrix} 3 \\ 8 \end{pmatrix}$
$B$	$B = \begin{pmatrix} -4 \\ 2 \end{pmatrix}$
$C$	$C = \begin{pmatrix} 5 \\ 1 \end{pmatrix}$

TABLE 0: Variables Used

The area of a triangle ABC is given by :

$$\frac{1}{2} \|(\mathbf{A} - \mathbf{B}) \times (\mathbf{A} - \mathbf{C})\|$$

$$\mathbf{A} - \mathbf{B} = \begin{pmatrix} -1 \\ 0 \end{pmatrix} - \begin{pmatrix} 1 \\ 3 \end{pmatrix} = \begin{pmatrix} -2 \\ -3 \end{pmatrix} \quad (1)$$

$$\mathbf{A} - \mathbf{C} = \begin{pmatrix} -1 \\ 0 \end{pmatrix} - \begin{pmatrix} 3 \\ 2 \end{pmatrix} = \begin{pmatrix} -4 \\ -2 \end{pmatrix} \quad (2)$$

$$\frac{1}{2} \|(\mathbf{A} - \mathbf{B}) \times (\mathbf{A} - \mathbf{C})\| = 4 \quad (3)$$

The area of the triangle ABC is 4

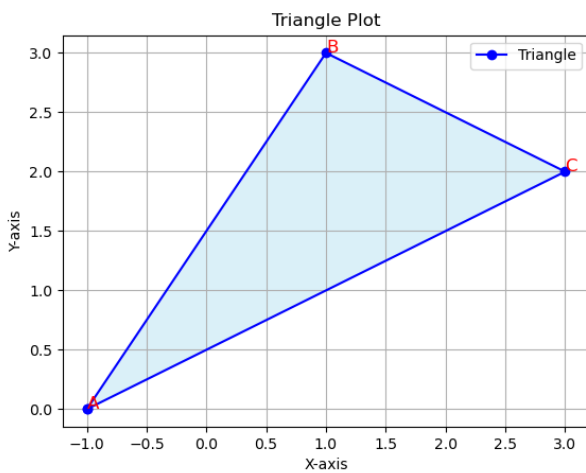


Fig. 0