

Triangle $\Rightarrow$ Area

We want to find the Area of triangle using two systems:

(a) Formula.

(b) $S = \frac{a \cdot h}{2} \quad (\alpha = 90^\circ)$

Given: Point C(2,4)

Point B(3, -3)

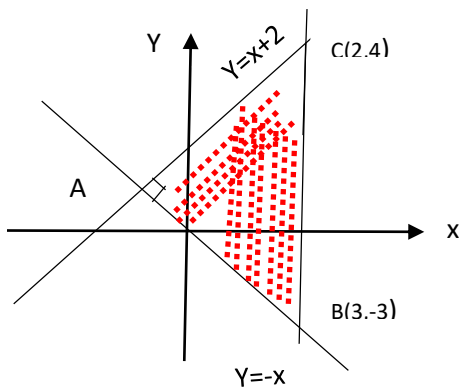
$$AC \equiv y = x + 2$$

$$AB \equiv y = -x$$

A: $2 + x = -x$

$$2x = -2 \Rightarrow x = -1$$

$$A(-1, 1)$$



$$(a) \frac{1}{2} \begin{vmatrix} 2 & 4 & 1 \\ -1 & 1 & 1 \\ 3 & -3 & 1 \end{vmatrix}$$

$$= \frac{1}{2} \{2(4) - 4(-1-3) + (0)\} = \frac{8+16}{2} = 12$$

$$(b) AB = \sqrt{(3+1)^2 + (-3-1)^2} = \sqrt{32} = 4\sqrt{2}$$

$$AC = \sqrt{3^2 + 3^2} = \sqrt{18} = 3\sqrt{2}$$

$$\frac{ah}{2} = \frac{3\sqrt{2} \cdot 4\sqrt{2}}{2} = 12$$