

Reflection:

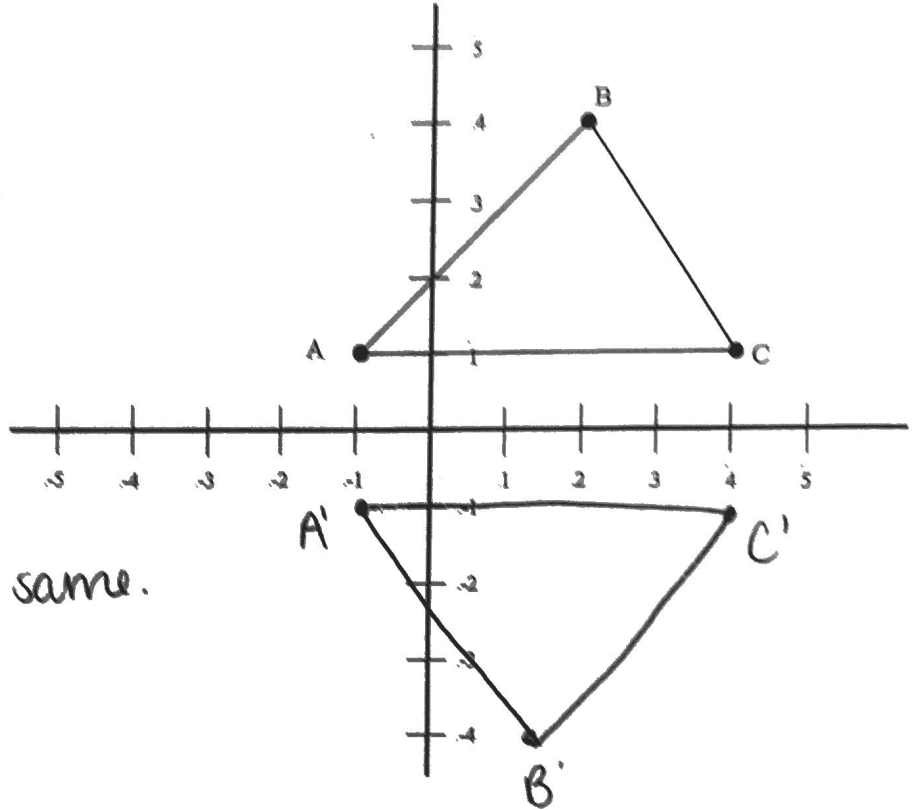
Ex 1: Given $\triangle ABC$ with points $A(-1, 1)$, $B(2, 4)$, $C(4, 1)$, reflect $\triangle ABC$ through the x-axis.

(A) Graph

$A(-1, 1)$

$B(2, 4)$

$C(4, 1)$



What you reflect across remains the same.

(B) Vertex matrices

Given image

$$\begin{matrix} x & A & B & C \\ & \begin{bmatrix} -1 & 2 & 4 \\ 1 & 4 & 1 \end{bmatrix} \end{matrix} \longrightarrow$$

Transformed image

$$\begin{matrix} x & A' & B' & C' \\ & \begin{bmatrix} -1 & 2 & 4 \\ -1 & -4 & -1 \end{bmatrix} \end{matrix}$$

(C) Algebraic (arrow) rule

$$(x, y) \longrightarrow (x, -y)$$

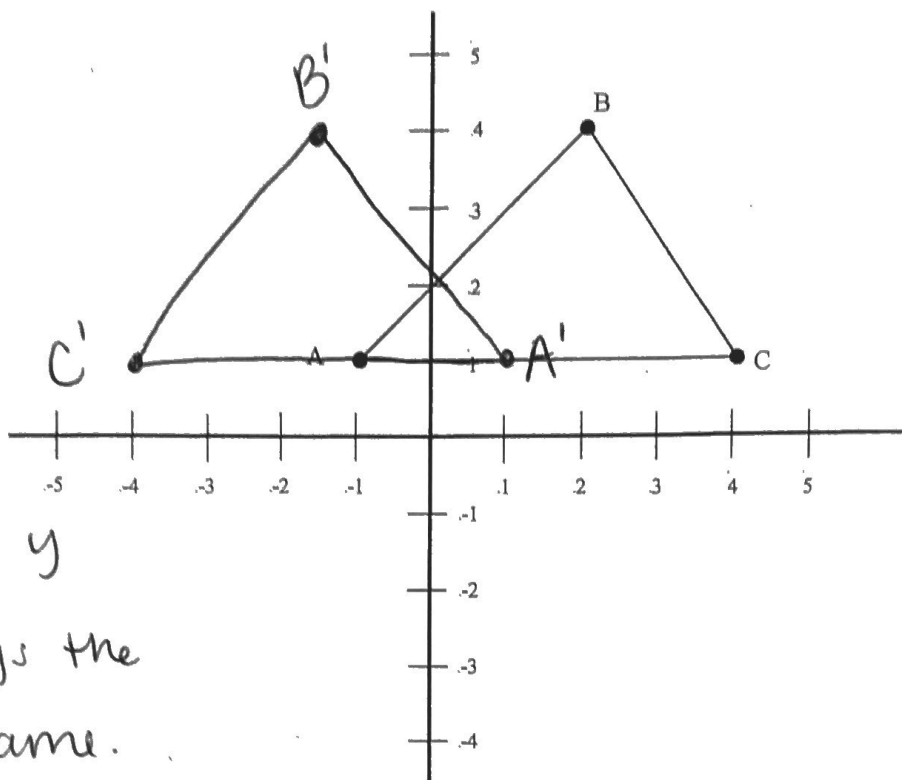
Ex 2: Given $\triangle ABC$ with points $A(-1, 1)$, $B(2, 4)$, $C(4, 1)$, reflect $\triangle ABC$ through the y-axis.

(A) Graph

$$A(-1, 1)$$

$$B(2, 4)$$

$$C(4, 1)$$



Reflect across y
means y stays the
same.

(B) Vertex matrices

Given image

$$\begin{array}{c} X \\ Y \end{array} \begin{array}{ccc} A & B & C \\ \left[\begin{array}{ccc} -1 & 2 & 4 \\ 1 & 4 & 1 \end{array} \right] \end{array}$$

Transformed image

$$\begin{array}{c} X \\ Y \end{array} \begin{array}{ccc} A' & B' & C' \\ \left[\begin{array}{ccc} 1 & -2 & -4 \\ 1 & 4 & 1 \end{array} \right] \end{array}$$

(C) Algebraic (arrow) rule

$$(x, y) \longrightarrow (-x, y)$$

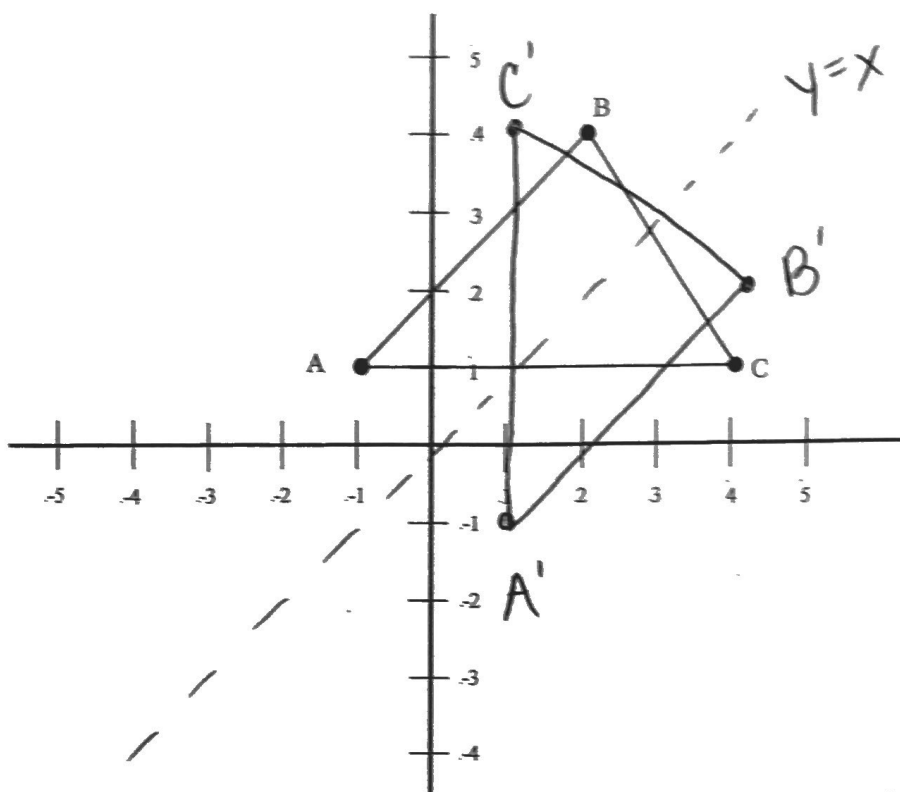
Ex 3: Given $\triangle ABC$ with points $A(-1, 1)$, $B(2, 4)$, $C(4, 1)$, reflect $\triangle ABC$ thru the line $y=x$.

(A) Graph

$$A(-1, 1)$$

$$B(2, 4)$$

$$C(4, 1)$$



(B) Vertex matrices

Given image

$$\begin{array}{c} A & B & C \\ x & \begin{bmatrix} -1 & 2 & 4 \end{bmatrix} \\ y & \begin{bmatrix} 1 & 4 & 1 \end{bmatrix} \end{array}$$

Transformed image

$$\begin{array}{c} A' & B' & C' \\ x & \begin{bmatrix} 1 & 4 & 1 \end{bmatrix} \\ y & \begin{bmatrix} -1 & 2 & 4 \end{bmatrix} \end{array}$$

(C) Algebraic (arrow) rule

$$(x, y) \rightarrow (y, x)$$