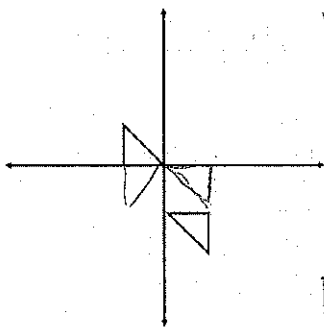
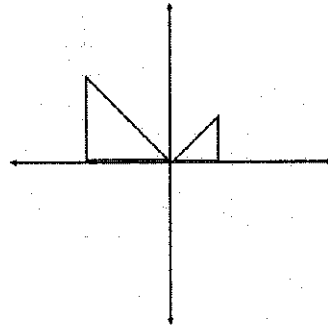


1. Quadrilateral ABCD $\begin{bmatrix} -3 & 4 & 5 & -2 \\ -3 & 2 & -2 & -1 \end{bmatrix}$ is enlarged by a scale factor of 5. The image is quadrilateral A'B'C'D'.
- What is the transformation rule $(x, y) \rightarrow (5x, 5y)$
 - What is the vertex matrix of A'B'C'D' $\begin{bmatrix} -15 & 20 & 25 & -10 \\ -15 & 10 & -10 & -5 \end{bmatrix}$
 - If the length of segment AB is 3 units, what is the length of segment A'B'? Explain your reasoning. 15 units (3 × 5)
 - If the area of quadrilateral ABCD is 20 square units, what is the area of quadrilateral A'B'C'D'? Explain your reasoning. 500 units² (20 × 5 L × 5 W)

2. Write the rule of the following composite transformations:



reflect x-axis
 $(x, y) \rightarrow (x, -y)$
 reflect y-axis
 $(x, -y) \rightarrow (-x, -y)$
 translate down 4
 $(x, y) \rightarrow (-x, -y - 4)$

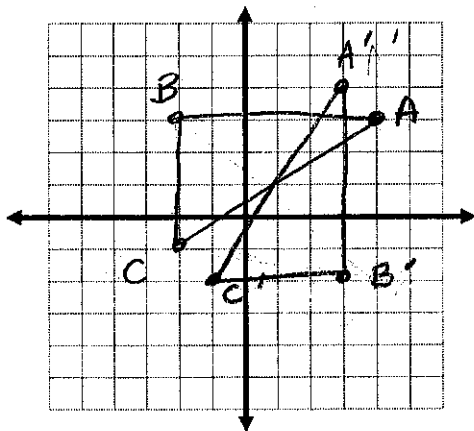


reflect y-axis
 $(x, y) \rightarrow (-x, y)$
 dilate × 2
 $(x, y) \rightarrow (-2x, 2y)$

3. A Triangle ABC is represented by matrix $\begin{bmatrix} 4 & -2 & -2 \\ 3 & 3 & -1 \end{bmatrix}$

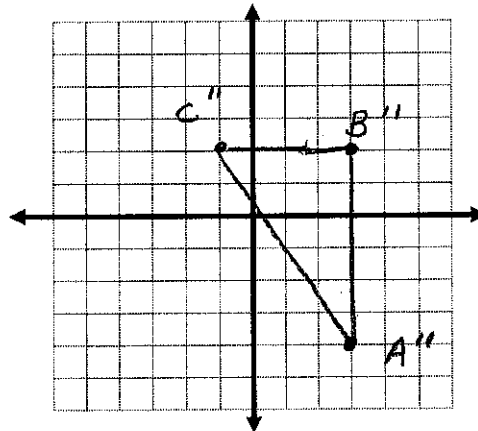
a. Sketch the triangle and its image under a reflection across the line $y = x$.

$$\begin{bmatrix} 3 & 3 & -1 \\ 4 & -2 & -2 \end{bmatrix}$$



b. Sketch the triangles reflection 90° clockwise rotations about origin.

$$\begin{bmatrix} 3 & 3 & -1 \\ -4 & 2 & 2 \end{bmatrix}$$



4. Triangle ABC = $\begin{bmatrix} 0 & 4 & 2 \\ -3 & -3 & 0 \end{bmatrix}$

a. Find the transformation rule and vertex matrix of the image of triangle ABC under a reflection across the y-axis followed by a vertical translation up 3 and a horizontal translation left 1.

$$(x, y) \rightarrow (-x - 1, y + 3)$$

$$\begin{bmatrix} -1 & -5 & -3 \\ 0 & 0 & 3 \end{bmatrix}$$