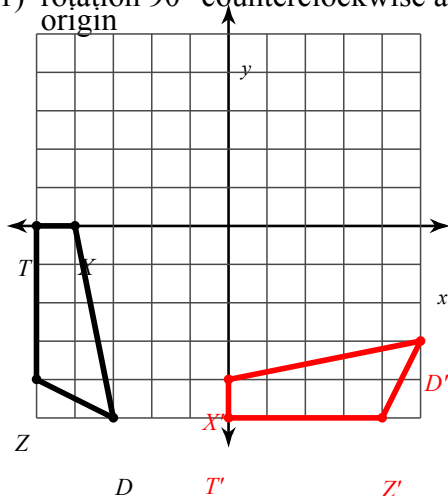


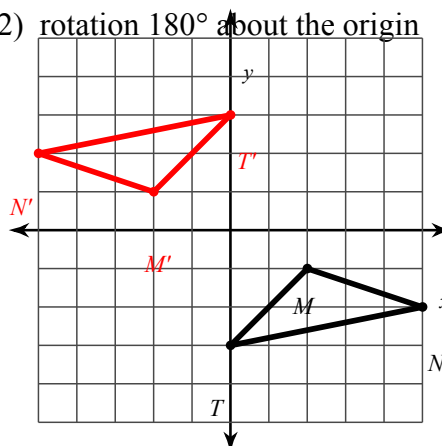
Practice 8.3 answers

Graph and label the image of the figure using the transformation given.

- 1) rotation 90° counterclockwise about the origin



- 2) rotation 180° about the origin



Find the coordinates of the vertices of each figure after the given transformation.

- 3) rotation 90° clockwise about the origin

$$G(0, -3), B(3, -1), U(1, -5)$$

$$G'(-3, 0), B'(-1, -3), U'(-5, -1)$$

#s 3 and 4: Use the rule for a counterclockwise translation of 270° degrees: $(x, y) \rightarrow (y, -x)$

- 4) rotation 90° clockwise about the origin

$$R(1, 1), F(5, 4), H(3, 1)$$

$$R'(1, -1), F'(4, -5), H'(1, -3)$$

- 5) rotation 180° about the origin

$$I(1, 3), F(5, 5), C(4, 2)$$

$$I'(-1, -3), F'(-5, -5), C'(-4, -2)$$

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

- 6) rotation 90° counterclockwise about the origin

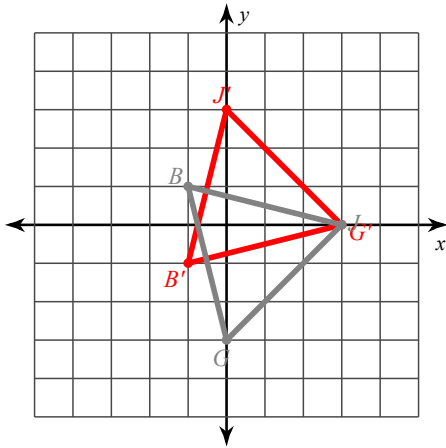
$$I(-5, 1), X(-4, 5), Q(-2, 0)$$

$$I'(-1, -5), X'(-5, -4), Q'(0, -2)$$

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

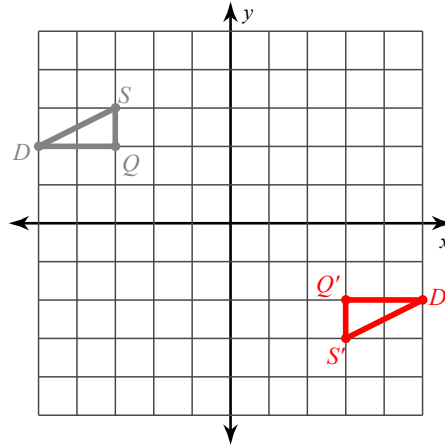
Graph the image and the preimage of the figure using the transformation given.

- 7) rotation 90° counterclockwise about the origin
 $G(0, -3), B(-1, 1), J(3, 0)$



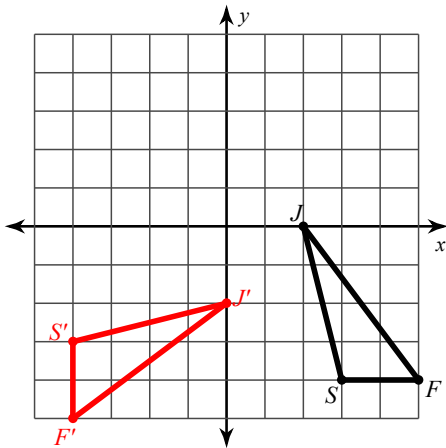
Use $(x,y) \rightarrow (-y, x)$

- 8) rotation 180° about the origin
 $D(-5, 2), S(-3, 3), Q(-3, 2)$ Use $(x,y) \rightarrow (-x,-y)$



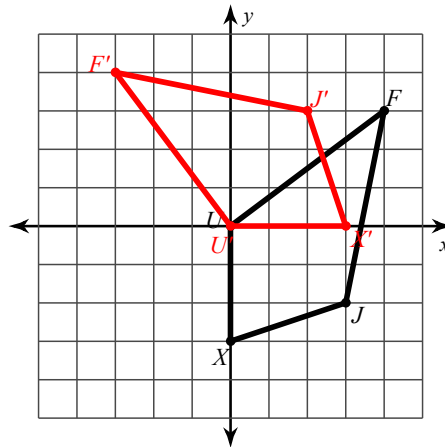
Graph the image and the preimage of the figure using the transformation given.

- 9) rotation 90° clockwise about the origin



This is the same as a counterclockwise rotation of 270 degrees: $(x,y) \rightarrow (y, -x)$

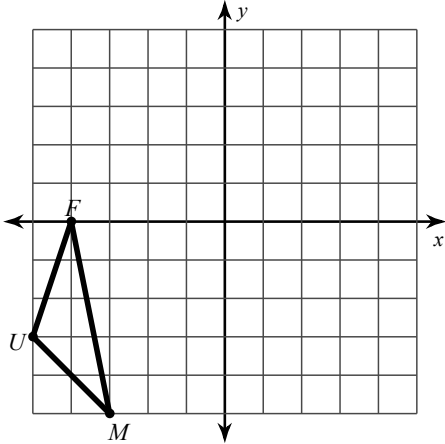
- 10) rotation 90° counterclockwise about the origin



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

Find the coordinates of the vertices of each figure after the given transformation. Then graph the reflection.

- 11) rotation 90° clockwise about the origin



$$U'(-3, 5), F'(0, 4), M'(-5, 3)$$

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

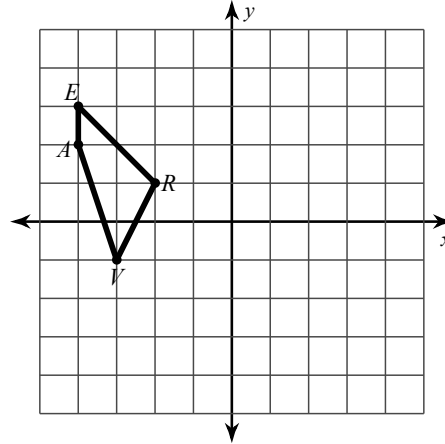
- 13) rotation 90° counterclockwise about the origin

$$U(2, -4), I(0, -1), C(2, -1), E(5, -3)$$

$$U'(4, 2), I'(1, 0), C'(1, 2), E'(3, 5)$$

$$\text{Use } (x, y) \rightarrow (-y, x)$$

- 12) rotation 180° about the origin



$$A'(4, -2), E'(4, -3), R'(2, -1), V'(3, 1)$$

$$\text{Use } (x, y) \rightarrow (-x, -y)$$

- 14) rotation 180° about the origin

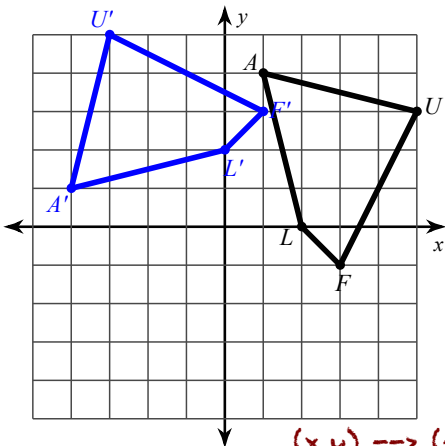
$$F(4, -3), D(3, 0), V(5, 0), E(5, -4)$$

$$F'(-4, 3), D'(-3, 0), V'(-5, 0), E'(-5, 4)$$

$$\text{Use } (x, y) \rightarrow (-x, -y)$$

Tell the type of reflection that describes each transformation.

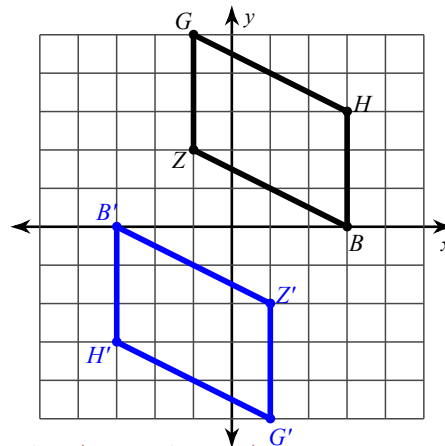
- 15)



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

rotation 90° counterclockwise about the origin

- 16)



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

rotation 180° about the origin

- 17) $F(1, 0), N(1, 3), V(2, 4), U(3, 4)$

to

$$F'(-1, 0), N'(-1, -3), V'(-2, -4), U'(-3, -4)$$

rotation 180° about the origin

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

- 18) $Q(-3, 1), A(-4, 3), I(-2, 4), E(0, 4)$

to

$$Q'(1, 3), A'(3, 4), I'(4, 2), E'(4, 0)$$

rotation 90° clockwise about the origin

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