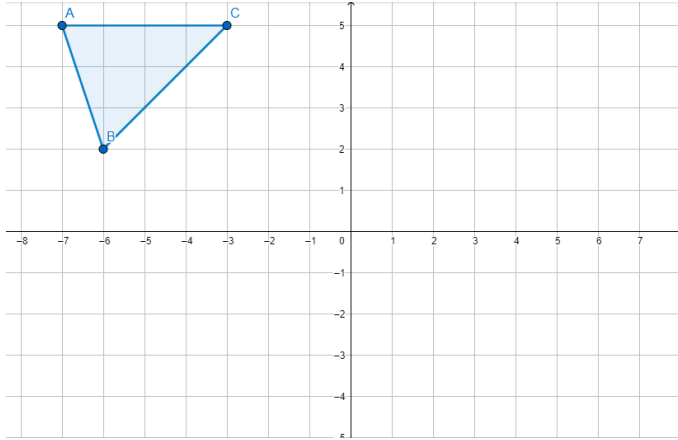


See ANSWERS below on PAGE 3.

1. Given triangle ABC shown below, find the image that results from the following transformation: $R_{180 \text{ degrees}} \circ T_{5, -2}$.



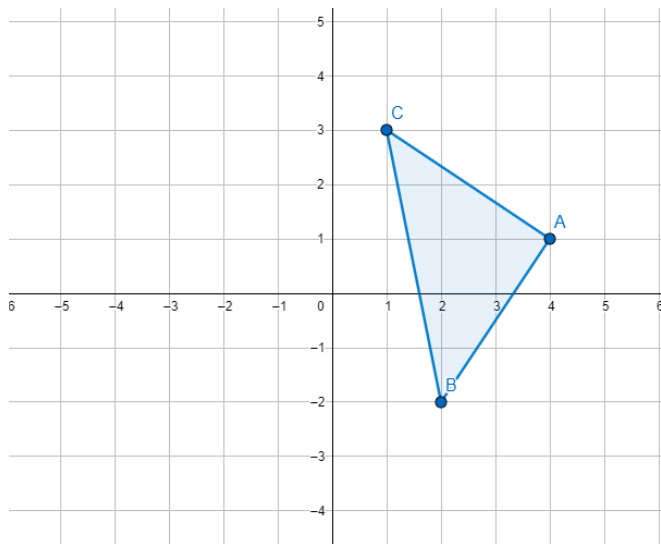
2. The point (6, -4) is rotated 180 degrees clockwise around the origin and then translated right 4 units and down 2 units. What are the coordinates of the resulting image?

3. The point (5, 2) is rotated 270 degrees counterclockwise around the origin and then dilated by a scale factor of 3 at the origin. What are the coordinates of the resulting image?

4. Line segment DE, with D (4, -6) and E (8, -9) is reflected over the x-axis and then rotated 90 degrees about the origin. What is the resulting image?

5. Given triangle ABC below, find the image that results from the following transformation:

$r_y = x \circ R_{270 \text{ degrees}}$

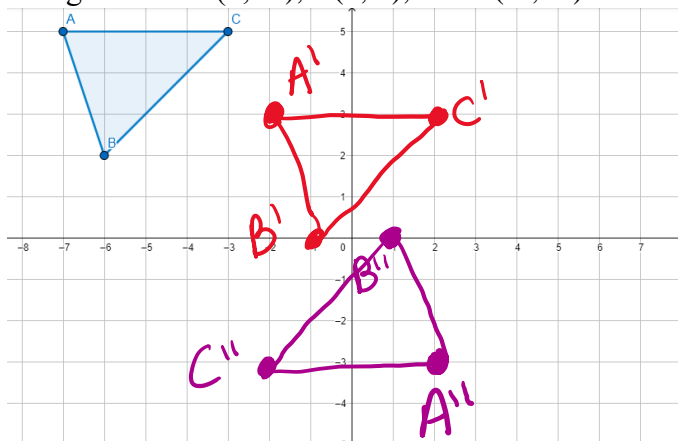


For each point given in the table below, (1) plot the point, (2) perform the indicated transformations and (3) give the resulting point:

	$T_{2, -3}$ o $R_{90 \text{ degrees}}$	$r_{x\text{-axis}}$ o $T_{-4, 1}$	$r_{y=-x}$ o $r_{y\text{-axis}}$	$R_{180 \text{ degrees}}$ o $r_{y=x}$
6. (3, 1)				
7. (-4, -8)				
8. (11, 3)				
9. (0, -6)				
10. (-4, 5)				
11. (7, -4)				
12. (3, 0)				

Answer Key:

1. triangle with $A''(2, -3)$, $B(1, 0)$, and $C(-2, -3)$



① $T(5, -2) (x+5, -2)$

② $R_{180} (-x, -y)$

$A''(2, -3)$

$B''(1, 0)$

$C''(-2, -3)$

2. $(-2, 2)$

① $R_{180} (-x, -y)$

② $T_{4, -2} (x+4, y-2)$

$(6, -4) \xrightarrow{\text{Rotate}} (-6, 4) \xrightarrow{\text{Translate}} (-2, 2)$

3. $(6, -15)$

① $R_{270 \text{ ccw}} (y, -x)$

② $D_3 (3y, -3x)$

$(5, 2) \xrightarrow{\text{rotate}} (2, -5) \xrightarrow{\text{Dilate}} (6, -15)$

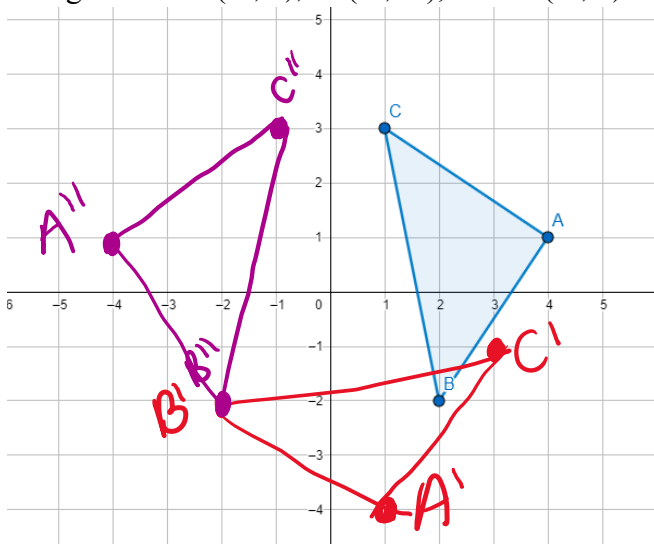
4. line segment with $D''(-6, 4)$ and $E''(-9, 8)$

$D(4, -6)$ ① $r_{x\text{-axis}} (x, -y)$

$E(8, -9)$ ② $R_{90} (-y, x)$

$D(4, -6) \rightarrow D'(4, 6) \rightarrow D''(-6, 4)$
 $E(8, -9) \rightarrow E'(8, 9) \rightarrow E''(-9, 8)$

5. triangle with $A''(-4, 1)$, $B''(-2, -2)$, and $C''(-1, 3)$



① $R_{270} (y, -x)$

② $r_{y=x} (y, x)$

$A''(-4, 1)$

$B''(-2, -2)$

$C''(-1, 3)$

	$T_{2, -3}$ o $R_{90 \text{ degrees}}$	$r_{x\text{-axis}}$ o $T_{-4, 1}$	$r_{y=-x}$ o $r_{y\text{-axis}}$	$R_{180 \text{ degrees}}$ o $r_{y=x}$
6. (3, 1)	(1, 0)	(-1, -2)	(-1, 3)	(-1, -3)
7. (-4, -8)	(10, -7)	(-8, 7)	(8, -4)	(8, 4)
8. (11, 3)	(-1, 8)	(7, -4)	(-3, 11)	(-3, -11)
9. (0, -6)	(8, -3)	(-4, 5)	(6, 0)	(6, 0)
10. (-4, 5)	(-3, -7)	(-8, -6)	(-5, -4)	(-5, 4)
11. (7, -4)	(6, 4)	(3, 3)	(4, 7)	(4, -7)
12. (3, 0)	(2, 0)	(-1, -1)	(0, 3)	(0, -3)

① $R_{90} (-y, x)$ ① $T_{-4, 1} (x-4, y+1)$ ① $r_{y\text{-axis}} (-x, y)$ ① $r_{y=x} (y, x)$
 ② $T_{2, -3} (x+2, y-3)$ ② $r_{x\text{-axis}} (x, -y)$ ② $r_{y=-x} (-y, -x)$ ② $R_{180} (-x, -y)$