9.4

Rotations

Name_____ Date_____

9.4 – Exploring Rotations

In this assignment, you need to use the sketch located at my website named: "**9.4 - Rotations (New GEOGEBRA**". Remember to stay on task on this assignment. Make sure you pay very close attention to the directions and questions.

Your goal is to make very good observations. Many of your comments and answers will look like the following:

- "Switch *x*-coordinate and *y*-coordinate."
- "Change the second number to the opposite."
- "Change the first and second numbers to the opposite"

Investigation 1 - Rotating 90° Counter-clockwise (Rotating 270° Clockwise).

For the original figure, what are its coordinates?

A(,   ), B(,   ), C(,   )

At the top left, move the slider so the angle of rotations is at 90°. For the new image, what are its coordinates?

A'(,   ), B'(,   ), C'(,   )

From your observation, what do you notice is the relationship between the original figure and the image? (For help refer to the above comments and answers)

- Switch the _____ coordinate and the _____ coordinate.

- Change the first number to the _____ .

Rule for Rotating 90° counter-clockwise (Rotating 270° clockwise).

Move any point on the original and move it around. Does your hypothesis regarding the coordinates still hold true when a new figure is formed? (Circle one)   YES   NO

Investigation 2 - Rotating 180 Degrees.

For the original figure, what are its coordinates?

A(,   ), B(,   ), C(,   )

At the top left, move the slider so the angle of rotations is at 180°. For the new image, what are its coordinates?

A'(,   ), B'(,   ), C'(,   )

From your observation, what do you notice is the relationship between the original figure and the image? (For help refer to the above comments and answers)

- Change the first and second number to the _____ .

Rule for Rotating 180°

Move any point on the original and move it around. Does your hypothesis regarding the coordinates still hold true when a new figure is formed? (Circle one)   YES   NO

Investigation 3 - Rotating 270° Counter-clockwise (Rotating 90° Clockwise).

For the original figure, what are its coordinates?

A(,   ) , B(,   ) , C(,   )

At the top left, move the slider so the angle of rotations is at 270°. For the new image, what are its coordinates?

A'(,   ) , B'(,   ) , C'(,   )

From your observation, what do you notice is the relationship between the original figure and the image? (For help refer to the above comments and answers)

- Switch the ____ coordinate and the ____ coordinate.

- Change the second number to the _____ .

Rule for Rotating 270° counter-clockwise (Rotating 90° clockwise).

Move any point on the original and move it around. Does your hypothesis regarding the coordinates still hold true when a new figure is formed? (Circle one)   YES   NO   What rule can you come up with?

Graph the image of the figure using the given transformation.

1) rotation 180° about the origin
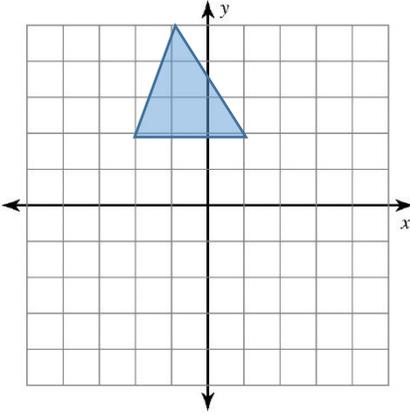
2) rotation 90° counter-clockwise about the origin
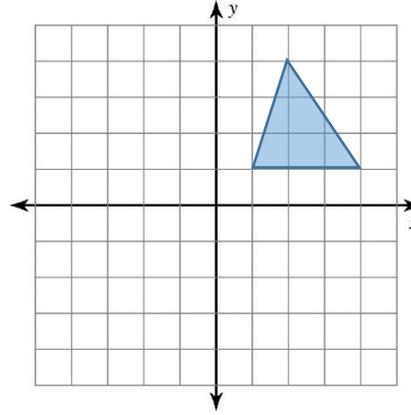
3) rotation 270° counter-clockwise about the origin
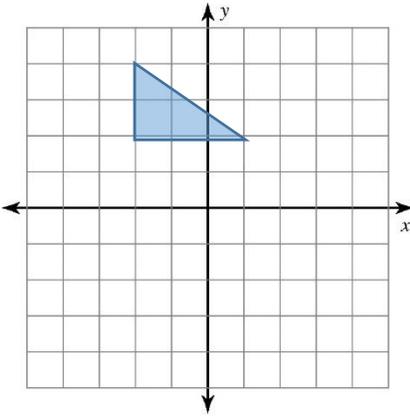
4) rotation 180° about the origin
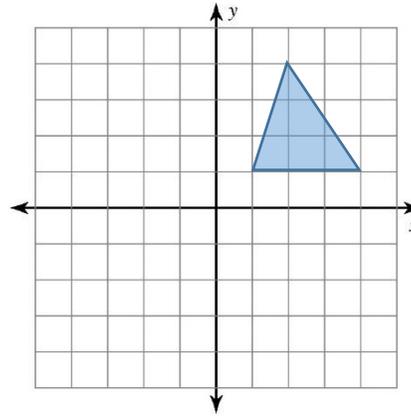
5) rotation 90° clockwise about the origin
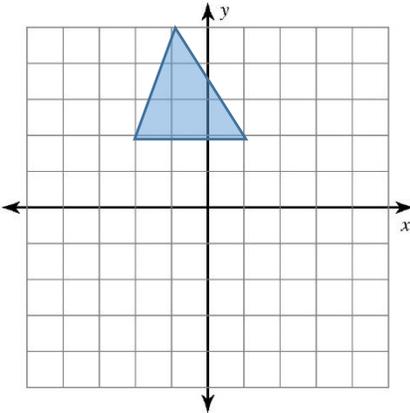
6) rotation 90° clockwise about the origin
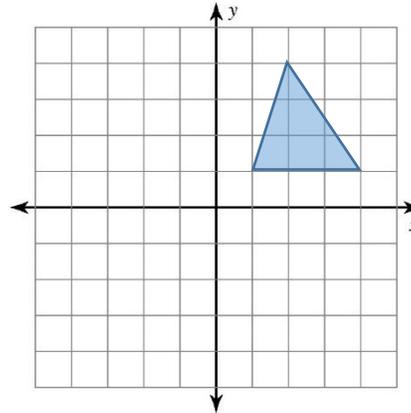
7) rotation 180° about the origin
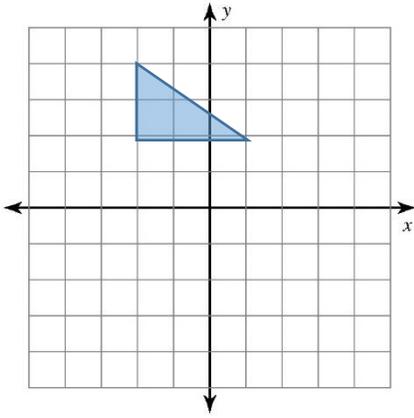
8) rotation 180° about the origin
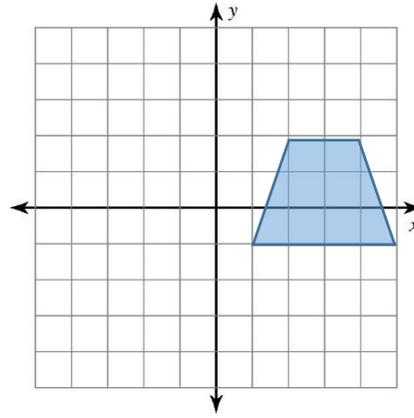
9) rotation 90° clockwise about the origin
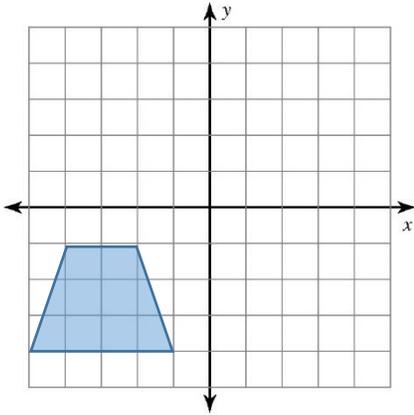
10) rotation 270° counter-clockwise about the origin
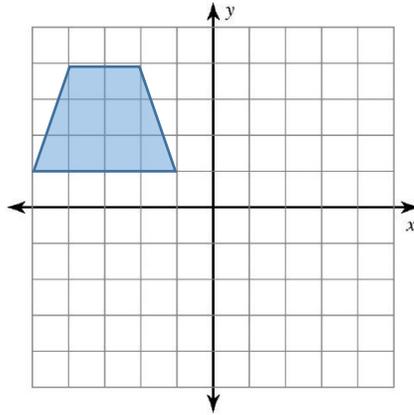
Vocabulary

Rotation

Rotating a figure around a point
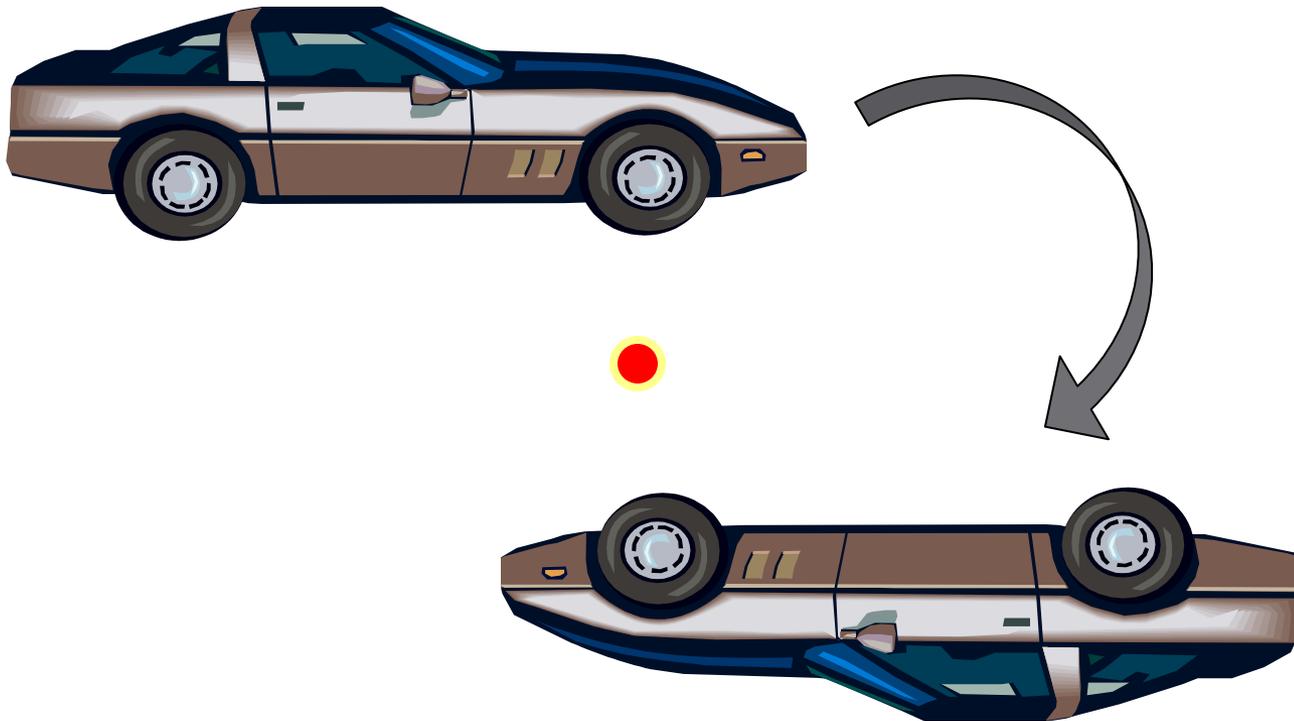
Rotation on a Coordinate Plane

Rotate the figure 180° around the origin
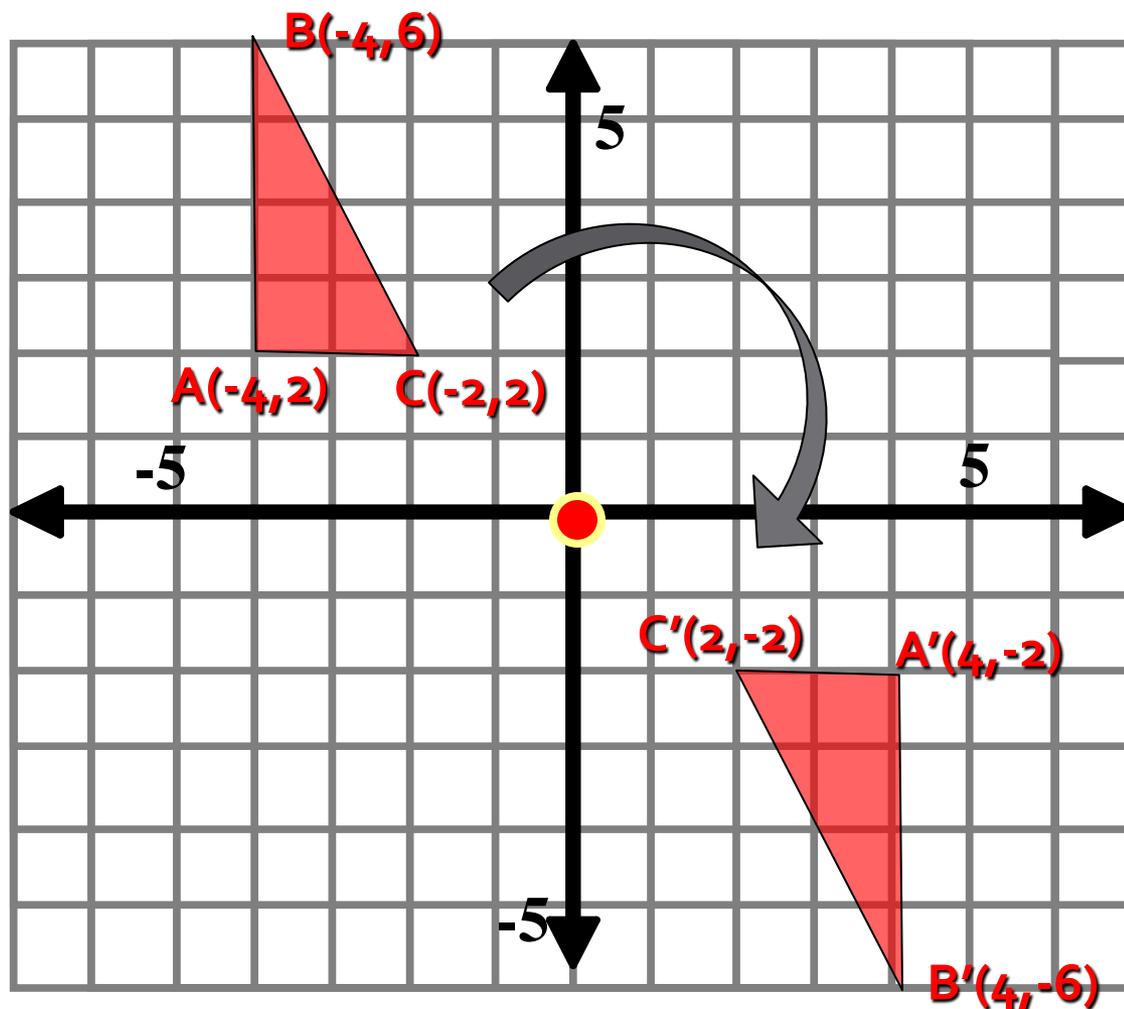
Rotation on a Coordinate Plane

Rotate the 90° clockwise around the origin
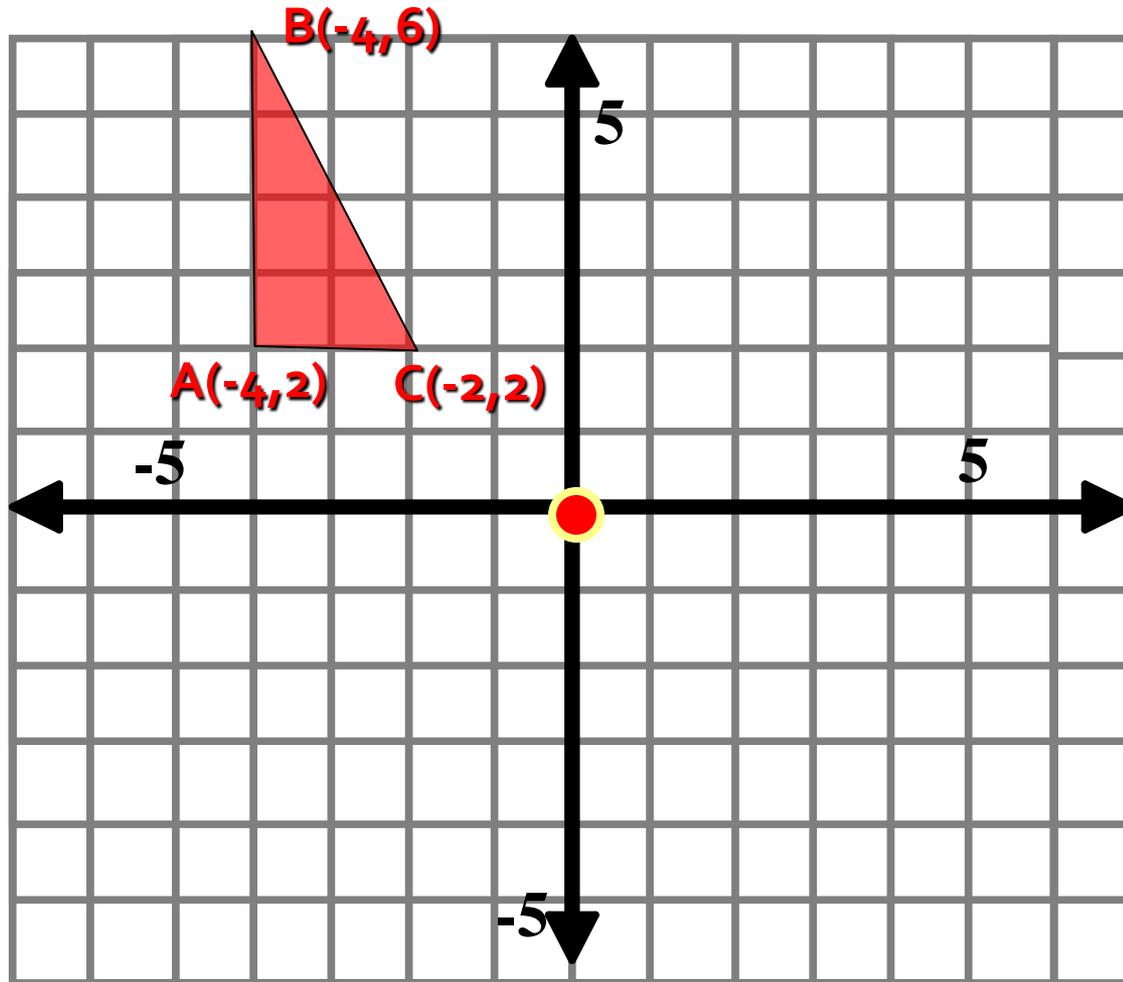
Rotation on a Coordinate Plane

Rotate the 90° counter-clockwise around the origin
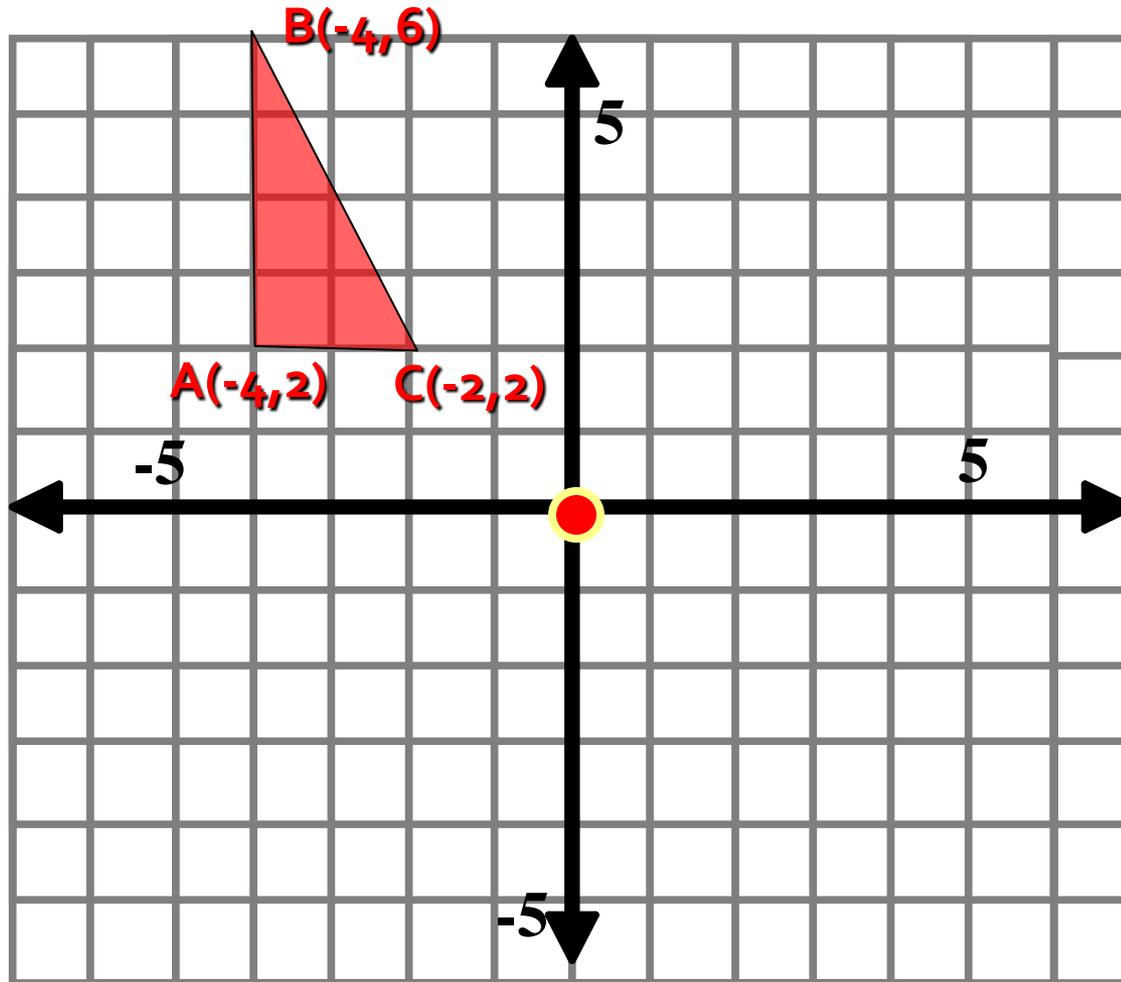
Rotation on a Coordinate Plane

Rotate the figure 180° around the origin
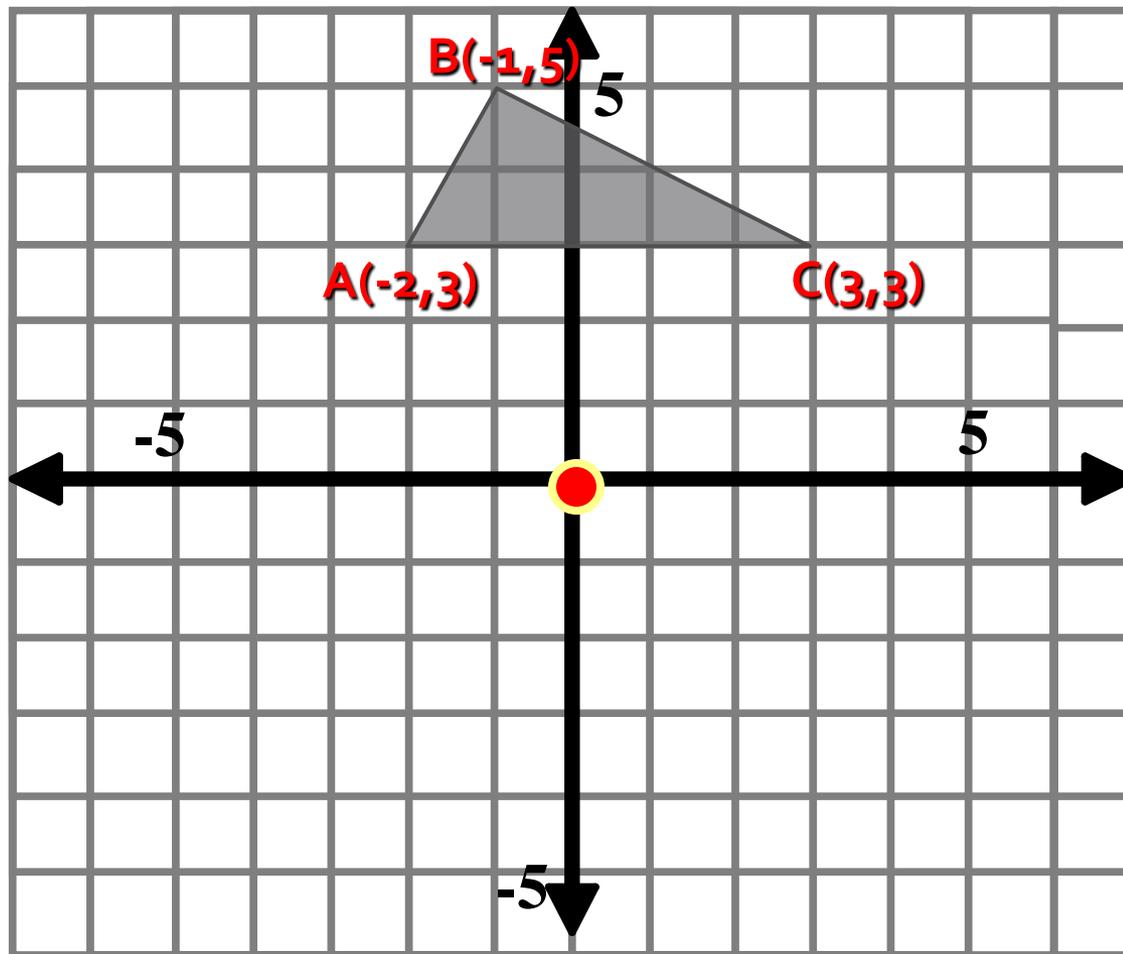
Rotation on a Coordinate Plane

Rotate the figure 90° counter-clockwise around the origin
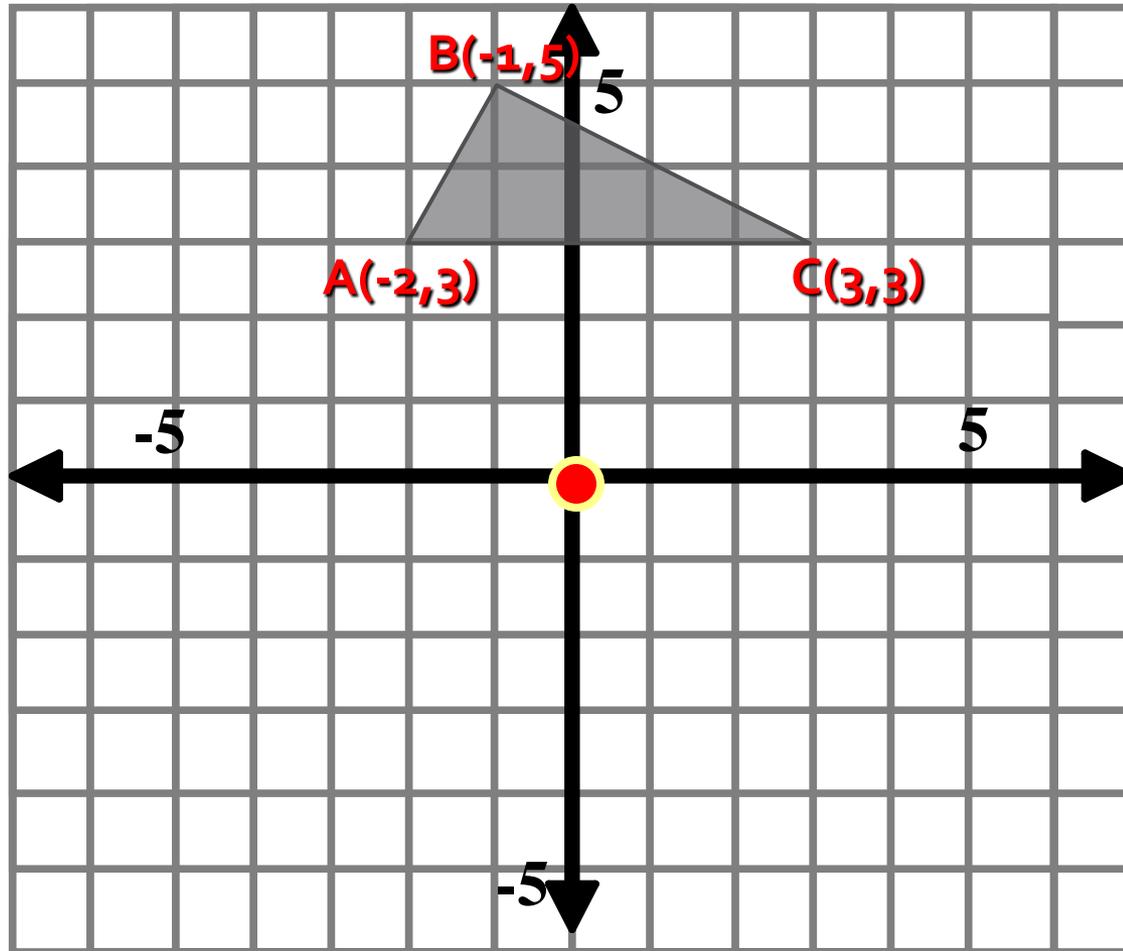
Rotation on a Coordinate Plane

Rotate the figure 270° counter-clockwise around the origin
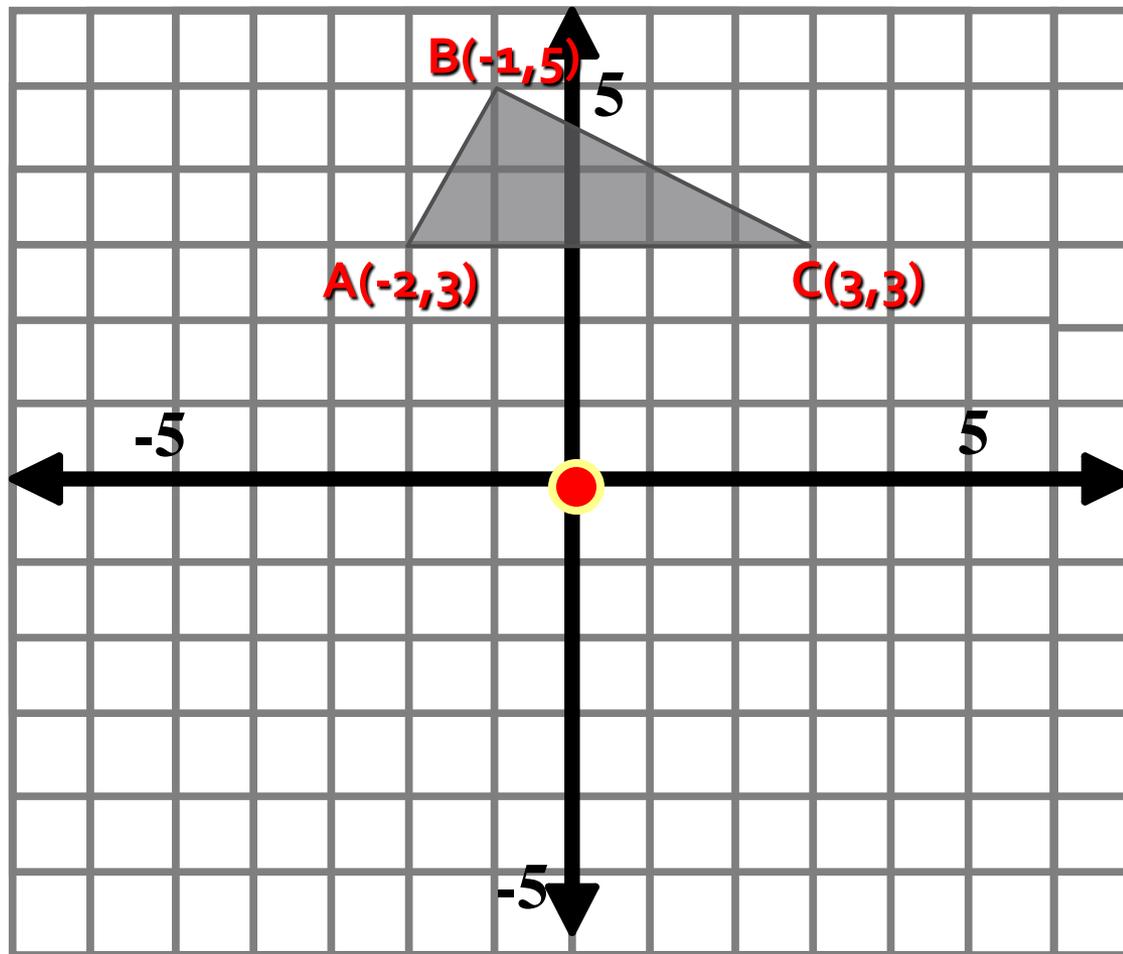
Rotation on a Coordinate Plane

Rotate the figure 90° clockwise around the origin