

Objectives: Identify and draw rotations.

Rotation: a transformation that turns a figure around a fixed point, called the center of rotation.

- Is a rotation an isometry? Yes So, the preimage and the image are congruent.

EX 1: Tell what type of transformation is being performed.

- a) reflection b) rotation c) translation d) rotation



Rotations in the Coordinate Plane: rotations can be clockwise

or counterclockwise.

• All rotations will be about the origin (0,0)

To Rotate...

• **Clockwise 90°:**

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

➤ Example:

$$(4, 7) \rightarrow (7, -4)$$

• **Counterclockwise 90°:**

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

➤ Example:

$$(9, 2) \rightarrow (-2, 9)$$

• **180° (Either direction):**

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

➤ Example:

$$(-3, 8) \rightarrow (3, -8)$$

EX 2: Write the coordinates of the rotation of $\triangle ABC$

after a 90° clockwise rotation.

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

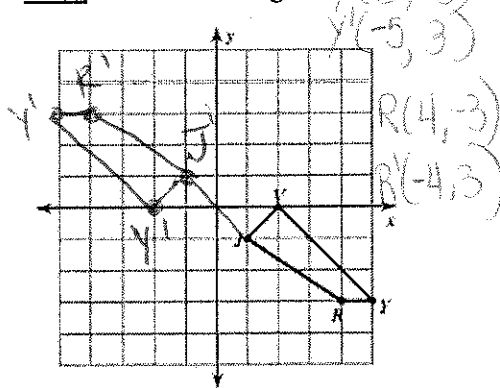
$$A(2, -1) \rightarrow A'(-1, -2)$$

$$B(4, 1) \rightarrow B'(1, -4)$$

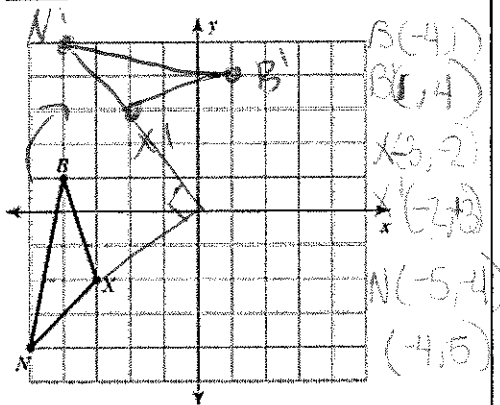
$$C(3, 3) \rightarrow C'(3, -3)$$

Graph the image of the following preimages according to their rotations.

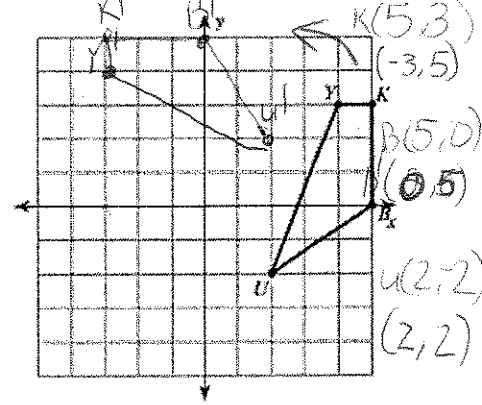
EX 3: 180° about origin



EX 4: 90° clockwise about origin

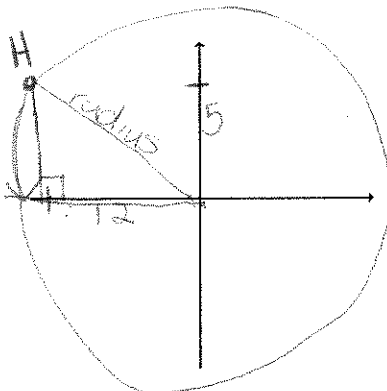


EX 5: 90° counter about origin



EX 6: Point H has coordinate $(-12, 5)$.

After a counterclockwise rotation about the origin, the image of H lies on the x -axis. How far is point H from the origin?



$$(-13, 0)$$

$$5^2 + 12^2 = c^2$$

$$25 + 144 = 169$$

$$\sqrt{169} = c$$

13 spaces