Lesson 6: Rotations of 180 Degrees

Classwork

Example 1
The picture below shows what happens when there is a rotation of 180° around center O.

Example 2
The picture below shows what happens when there is a rotation of 180° around center O, the origin of the coordinate plane.
Exercises 1–9

1. Using your transparency, rotate the plane 180 degrees, about the origin. Let this rotation be $Rotation_0$. What are the coordinates of $Rotation_0(2, -4)$?

2. Let $Rotation_0$ be the rotation of the plane by 180 degrees, about the origin. Without using your transparency, find $Rotation_0(-3, 5)$.
3. Let $\text{Rotation}_{0}$ be the rotation of 180 degrees around the origin. Let $L$ be the line passing through $(-6, 6)$ parallel to the $x$-axis. Find $\text{Rotation}_{0}(L)$. Use your transparency if needed.

4. Let $\text{Rotation}_{0}$ be the rotation of 180 degrees around the origin. Let $L$ be the line passing through $(7,0)$ parallel to the $y$-axis. Find $\text{Rotation}_{0}(L)$. Use your transparency if needed.
5. Let $Rotation_{0}$ be the rotation of 180 degrees around the origin. Let $L$ be the line passing through $(0,2)$ parallel to the $x$-axis. Is $L$ parallel to $Rotation_{0}(L)$?

6. Let $Rotation_{0}$ be the rotation of 180 degrees around the origin. Let $L$ be the line passing through $(4,0)$ parallel to the $y$-axis. Is $L$ parallel to $Rotation_{0}(L)$?
7. Let $Rotation_0$ be the rotation of 180 degrees around the origin. Let $L$ be the line passing through $(0, -1)$ parallel to the $x$-axis. Is $L$ parallel to $Rotation_0(L)$?

8. Let $Rotation_0$ be the rotation of 180 degrees around the origin. Is $L$ parallel to $Rotation_0(L)$? Use your transparency if needed.
9. Let $Rotation_0$ be the rotation of 180 degrees around the center $O$. Is $L$ parallel to $Rotation_0(L)$? Use your transparency if needed.