Graphing Complex Transformations - Step-by-Step Lesson
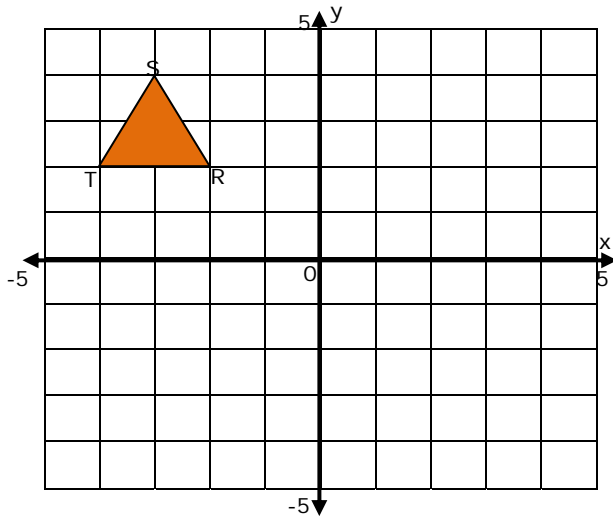
Problem: Write the coordinates of the vertices after a translation and rotation. Graph the image of TSR after the following transformations:

Translation $(x, y) \longrightarrow (x-1, y-1)$

Rotation 270° counterclockwise around the origin.

Explanation:

Step 1) Use the transformation rule $(x,y) \longrightarrow (x-1,y-1)$ to find the image of each of its three vertices.

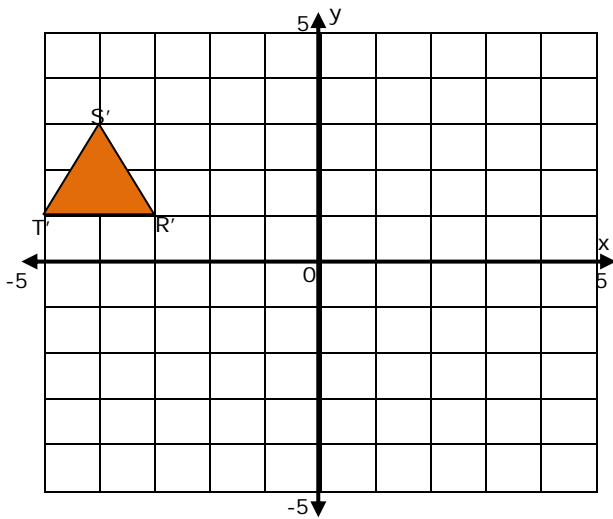S (-3, 4) $\longrightarrow$ S' (-4, 3)

T (-4, 2) $\longrightarrow$ T' (-5, 1)

R (-2, 2) $\longrightarrow$ R' (-3, 1)

Rotation 270° counterclockwise around the origin.

Second, rotate STR 270° counterclockwise about the origin. Use the transformation (x, y) ⟶ (y, -x) to find the image of each of its three vertices.

S (-4, 3) ⟶ S' (3, 4)

T (-5, 1) ⟶ T' (1, 5)

R (-3, 1) ⟶ R' (1, 3)

Rotation 270° counterclockwise around the origin.