

Homework 9.102, April 30, 2022

0. Do CLT 117, 118, and 119.

1. Use graph paper for the rest of this homework and attach it to this page. You may use calculators. Graph the points $(0, 0)$, $(5, 0)$, $(-5, 0)$, $(0, 5)$, $(0, -5)$, and $(-5, -5)$.

2. Label the points $A = (0, 0)$, $B = (5, 0)$, and $C = (5, 5)$.

3. Draw the triangle of which A, B, and C are the vertices. Label it as J.

4. Reflect the point C across the x -axis, the line where $y = 0$ and x takes lots of different values. Label the new point C' .

5. I was thinking of asking you to reflect A and B across the x -axis, but I decided not to. Why don't I bother to have you do that?

6. The reflection of J across the x -axis has vertices A, B, and C' . Draw in the sides of that reflection, and label it as J' .

7. Now we will do rotation. When point A is rotated 90 degrees counterclockwise around the $(0,0)$, it stays that same. That is not true of B and C. Rotate each of them 90 degrees around $(0,0)$ and label the resulting points as B'' and C'' .

8. Draw the sides of the triangle J'' that is the rotation of J for 90 degrees around $(0,0)$ and that has vertices A, B'' , and C'' .

9. Now we will do translation. To translate J 1 to the right and 2 up, we add $(1, 2)$ to each of its vertices. So add $(1,2)$ to A, B and C, and call them A''' , B''' , and C''' . To get you started: the point $B''' = (5, 0) + (1, 2) = (6, 2)$.

10. Draw the sides of the new triangle J''' that has vertices A''' , B''' , and C''' .