Worksheet 5: Trigonometry and Isometries

Show all work for full credit. All decimals should be correct to three (3) decimal places.

1. Solve for the unknown sides in each of the following. Give units.
   a. 
   b. 

2. Solve for the unknown angle in each of the following. Give units.
   a. 
   b. 

3. A restaurant needs to build a wheelchair ramp for its customers. The angle of elevation for a ramp should be $5^\circ$. If the vertical distance from the sidewalk to the front door is two feet, what is the horizontal distance the ramp will take up? How long will the ramp be? Clearly identify your answers. Give units. (4 points)
4. Find the image of the given figure under a translation from X to X'.

5. Find the image of the given figure under a reflection in line m.

6. Find the image of the given figure under a rotation of 90° with center O.

7. Find the coordinates of the point A(-8, 6) under the following transformations.
   a. A translation \((x, y) \rightarrow (x+7, y-10)\) followed by a clockwise rotation of 180°.
   b. A counterclockwise rotation of 90° centered at the origin followed by a reflection in the x-axis.
8. Find the image of the given figure under a dilation with center O and scale factor 3.