Lesson 3: Examples of Dilations

Classwork

**Example 1**

Dilate circle $A$, from center $O$ at the origin by scale factor $r=3.$

Exercises 1–2

1. Dilate ellipse $E$, from center $O$at the origin of the graph, with scale factor $r=2$. Use as many points as necessary to develop the dilated image of ellipse $E$.



1. What shape was the dilated image?

Exercise 3

1. Triangle $ABC$ has been dilated from center $O$ by a scale factor of $r=\frac{1}{4}$ denoted by triangle $A'B'C'$. Using a ruler, verify that it would take a scale factor of $r=4$ from center $O$ to map triangle $A'B'C'$onto triangle $ABC$.



Lesson Summary

Dilations map circles to circles and ellipses to ellipses.

If a figure is dilated by scale factor $r$, we must dilate it by a scale factor of $\frac{1}{r}$ to bring the dilated figure back to the original size. For example, if a scale factor is $r=4$, then to bring a dilated figure back to the original size, we must dilate it by a scale factor $r=\frac{1}{4}$.

Problem Set

1. Dilate the figure from center $O$ by a scale factor $r=2$. Make sure to use enough points to make a good image of the original figure.



1. Describe the process for selecting points when dilating a curved figure.
2. A triangle $ABC$ was dilated from center $O$ by a scale factor of $r=5$. What scale factor would shrink the dilated figure back to the original size?
3. A figure has been dilated from center $O$by a scale factor of $r=\frac{7}{6}$. What scale factor would shrink the dilated figure back to the original size?
4. A figure has been dilated from center $O$ by a scale factor of $r=\frac{3}{10}$. What scale factor would magnify the dilated figure back to the original size?