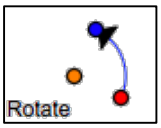
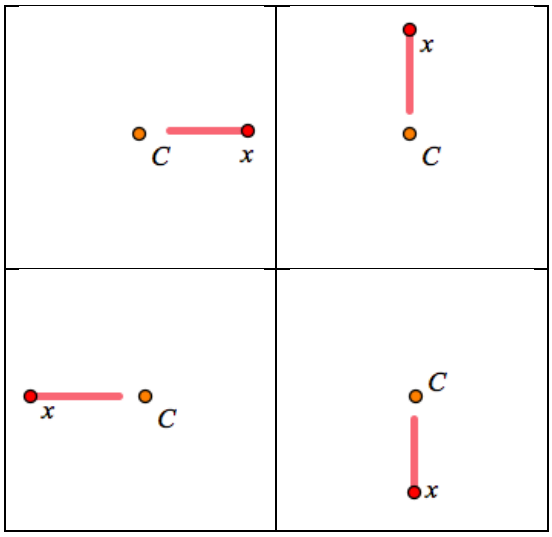
Rotate 2 Name(s):

1. In the top left quadrant, use the 

tool to create a rotate function. Attach each glowing object: x to x, C to C, and θ to θ. Position x just to the right of C.

Q1 Turn on tracing and drag x to the right. Where does the dependent variable go?

2. Construct rotate functions in the other three quadrants. (Leave $\theta = 90°$.) In each quadrant drag the independent variable in a different direction as shown to the right.

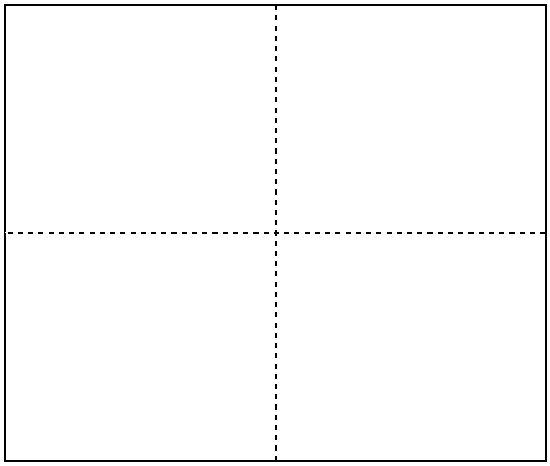


Q2 Which way does each independent variable move? Draw the traces to show your results.

Q3 What do you notice about their pattern?

3. On page 2, construct a rotate function in each quadrant. Use the same angle θ for all four functions. Be careful to keep x for each function in its own quadrant.)

Q4 Turn on traces and drag each x in a different direction: right, up, left, and down. Draw your results, including x, C, the value of θ, and the traces for each function.



Q5 Compare your results with your classmates. What do you notice about the patterns? What connection do you see between the patterns and the value of θ? How can you test your ideas?

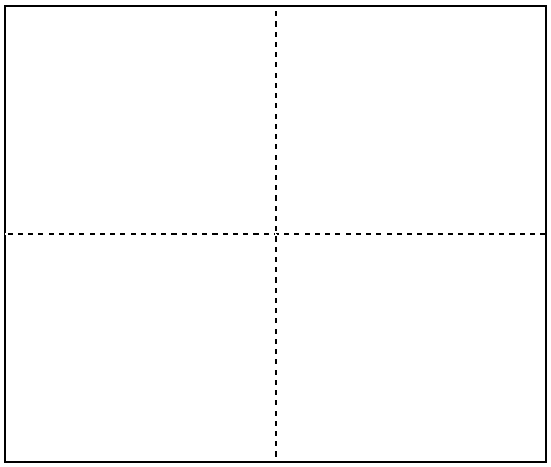
Video

4. In the top left quadrant on page 3, use the **Segment** and **Animate** tools to construct x restricted to a segment, and then construct a rotate function using x. Construct similar animations in the other quadrants, using different values for θ.

Q6 Press the Animate buttons, turn on tracing, and draw your results.

What do you notice?

What do you wonder?



Q7 On pages 4 and 5, perform your own experiments to learn more about the Rotate function family. How can you use the Distance and Compass tools to answer your questions, or to discover unexpected connections? Record your results below. Be sure to include things that didn't work as well as things that did work.