Polar Graphs
Demonstration Activity

1) Open the Polar Graphs Demonstration located at
http://demonstrations.wolfram.com/PolarTrace/

2) First get familiar with the various options. Choose the function. Choose different modes. Select how many decimal places you want to use. Adjust the slider for θ (you can animate it).

3) Let $r = \cos\theta$.

a) Draw a sketch below:

b) How many revolutions around the graph does it go as θ ranges from 0 to 2π?

c) Write the polar equation in rectilinear form.

4) Let $r = \sin(2\theta)$.

a) Draw a sketch below:

b) Describe the order of the quadrants in which each leaf is drawn as θ varies from 0 to 2π.

5) Let $r = \cos(3\theta)$.

a) Draw a sketch below:

b) For what angles θ does the graph hit the pole (0,0)?

6) Let $r = 1 - \sin\theta$.

a) Draw a sketch below:

b) Predict what the graph of $r = 2 + 2\sin\theta$ would be:

7) Let $r = \sin(\frac{8\theta}{5})$.

a) How many petals does it have?

b) How big does θ need to be to get a complete graph?