

NAME(S):
MATH 259

POLAR CURVES

JANUARY 24, 2014

1. Sketch the polar curve $r = 1 + \cos \theta$ (this curve is called a *cardioid*).



2. Find the area inside the cardioid $r = 1 + \cos \theta$.

- 3.** Sketch the circle $r = 3 \cos \theta$ on the same axes as the cardioid in problem 1. Determine the area outside the cardioid and inside this circle. (You'll have to find the points of intersection of these two curves to determine the limits of integration).
- 4.** How many points of intersection do the two curves have? Did you find all of them in the previous problem?