Problem Set #4 Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Calculator active

1. The figure below shows the graph of and . Let R be the region

 bound by the two curves and the x-axis.



 *R*

a. Find the coordinates of the intersection of and and the value of for at that point.

b. Set up and evaluate an integral expression that gives the area of ***R*** with respect to y.

c. is part of the curve . Find the polar equation for this curve.

d. Use the polar equation you found in part c to set up an integral expression that gives the area of ***R***

 with respect to θ.



2. The curve to the right is drawn in the xy-plane and is

 Described by the equation in polar coordinates

 for , where r is measured in meters and θ in radians.

a. Find the area bound by the curve and the x-axis.

b. Find the angle θ that corresponds to the point on

the curve with the x-coordinate 1.

c. For , is negative. What does this fact say about r? What does it say about the curve?

d. Find the value of θ in the interval that corresponds to the point on the curve in the first quadrant with greatest distance from the origin. Justify your answer.