

**Math 101B Chapter 9**

Name \_\_\_\_\_

*Show your work to receive credit. (10 points each problem.)*

I. Write each conic in standard form, sketch its graph, and find its focal point(s).

1.  $x^2 - 12y - 60 = 0$

2.  $16x^2 - 64x - 9y^2 - 208 = 0$

II. Given the parametric equations:  $\left. \begin{array}{l} x = 1 - t \\ y = t^3 - 3t \end{array} \right\}$  where  $0 \leq t \leq 4$ 

1. Make a table of values and graph its path showing its orientation.

2. Find  $dy/dx$  and all points of horizontal tangency.3. Find the length of the path.  
(use calculator to evaluate integral).

4. Find its corresponding rectangular equation by eliminating the parameter.

III. Given the polar equations: a)  $r = 2 \cos \theta$   
b)  $r = 2 - 2 \cos \theta$ 

1. Make a chart of values for both and graph on the same coordinate system.

2. Find the intersection points of equations.

3. Set up integrals to find the area of the intersection of the two graphs.

4. Write the parametric equations for b).

**EXTRA CREDIT (5 pts)**5. Write the parametric equations to rotate b) an angle of  $\pi/4$  in the clockwise direction with its pole at the rectangular point  $(5, -2)$ .