Math 222 Quiz 11

April 27, 2011

Your Name: *Your Section:*

Instructions: 25 minutes. The total points are more than 10, however, your maximum score is 10. **Pick the problems that you think are easy to do first.**

1. $r^2 = \cos\theta$. Identify symmetries. Sketch curve and get the slope at $(r, \pi/3)$ $r > 0$.(6′)

2. (a). The 'love' curve $r = 1 + \cos\theta$ is a cardioid. Get its length and the area inside.(4′)
   (b). In the figure below, $\pi/6 \le \theta \le \pi/3$. **Set up** the formulas for S_1 and S_2.(2′)

3. (a). $x^2 + y^2 = 1$ is a circle in plane. In space? What's needed to make a circle?(2′)
   (b). Find the radius and center of $x^2 + y^2 + z^2 + 4x - 4z = 0$.(2′) Sketch the tangent line on the top and parallel to x-axis. (No need to draw the sphere)(1′)