

Math 53: Quiz #1

February 1

GSI: M. Lindsey

20 points, 25 minutes

Name: _____

Problem 1

(9 points.) Write down a parametrization (in Cartesian coordinates) for the ellipse

$$\left(\frac{x}{a}\right)^2 + \left(\frac{y}{b}\right)^2 = 1,$$

and use this parametrization to compute the area of the ellipse. (If you can't find a parametrization for the ellipse, you can ask me (Mike) for one at the cost of 3 points.)

(See back for next problem!)

Problem 2

(10 points.) Sketch the curve given in polar coordinates by $r = \cos\left(\frac{\theta}{2}\right)$, with $\theta \in [0, 4\pi]$, and calculate the area enclosed by the upper inner loop. (If the meaning of ‘upper inner loop’ is not clear, your sketch is probably incorrect.)

Problem 3

(1 point.) Please circle all of the following times during which it would be feasible for you to make office hours:

M 10-11 M 12-1 M 5-6