

Name: \_\_\_\_\_

Math 252 Calculus II (Bueler)

Wednesday 28 February 2018

## Quiz #6

**In class. 25 minutes. No textbook or notes or calculator. 30 points total.**

1. (10 pts) Find the exact length of the curve:

$$y = \ln(\sec x), \quad -\pi/4 \leq x \leq \pi/4$$

2. (5 pts) Set up, but do not evaluate, an integral to find length of the ellipse:

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

**3. (a)** (5 pts) A large parabolic satellite dish (antenna), like those on West Campus, might have a radius of 3 m and a depth of 1 m. For instance, suppose we rotate the curve  $y = x^2/9$ ,  $0 \leq x \leq 3$ , around the  $y$ -axis to create the surface. Sketch the surface.

**(b)** (5 pts) Set up an integral to compute the surface area of the parabolic dish in part **(a)**.

**(c)** (5 pts) Evaluate the integral in part **(b)**.