

Name: _____ ID: _____

1. Find the exact length of the curve described by the polar equation

$$r = \theta^2, \quad 0 \leq \theta \leq 2\pi.$$

u-substitution will help with computing the antiderivative.

2. (a) Describe the shape formed by the points (x, y, z) which satisfy both of the equations

$$x^2 + y^2 = 1 \qquad \text{and} \qquad z = 3.$$

Describe the shape in detail, including its size and location.

- (b) Describe the surface described by the equation $x^2 + y^2 = 1$. Again, describe the shape in detail, including its size and location.