

LAST NAME:

FIRST NAME:

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**MATH 009C - Summer 2017**

Quiz 2: July 6, 2017

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1. Find  $\frac{dy}{dx}$  and  $\frac{d^2y}{dx^2}$ . For what values of  $t$  is the curve concave up?

$$x = 2 \sin(t), \quad y = 3 \cos(t), \quad 0 < t < 2\pi$$

2. Compute the length of the curve defined by the following parametric equations:

$$x = e^t \cos(t) \quad y = e^t \sin(t) \quad \text{for } 0 \leq t \leq 2\pi$$

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**Please, show all work.**

3. Find the surface area of the solid you get by rotating the following parametric curve around the  $x$ -axis for  $-2 \leq t \leq 0$ :

$$x = 4t^2 - 1 \quad y = 3 - 2t$$

4. Find the slope of the tangent line to the given polar curve at the specified angle  $\theta$ :

$$r = 2 \sin(\theta) \quad \theta = \frac{\pi}{6}$$

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Please, show all work.