Please show **all** your work and write your answer on the answer line unless otherwise indicated by the problem. Please read the questions carefully. You have 20 minutes for the quiz.

Name:_____

1. (6pts) Find the length of the curve $x(t) = 1 + 3t^2, y(t) = 4 + 2t^3$ for $0 \leq t \leq 1$

$$\int_0^1 \sqrt{\dot{x}^2 + \dot{y}^2} dt = \int_0^1 \sqrt{6^2 t^2 + 6^2 t^4} dt = 6 \int_0^1 t\sqrt{1 + t^2} dt = 2(\sqrt{8} - 1)$$

2. (4pts) Below you are given four parametric equations and their cartesian equations. Write the letter of the polar equation next to the matching cartesian equation.

   (a) $x = \sin(\theta), y = \cos(\theta), 0 \leq \theta \leq \pi$

   (b) $x = 4\cos\theta, y = 5\sin\theta, -\pi/2 \leq \theta \leq \pi/2$

   (c) $x = \sin^2\theta, y = \cos^2\theta$

   (d) $x = \sec\theta, y = \tan\theta, -\pi/2 < \theta < \pi/2$

- $(x/4)^2 + (y/5)^2 = 1, x \geq 0$ _____
- $x + y = 1, 0 \leq x \leq 1$ _____
- $x^2 - y^2 = 1, x \geq 1$ _____
- $x^2 + y^2 = 1, x \geq 0$ _____

b,c,d,a