

Name:

ID #:

Section #:

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- (1) [3pts] Sketch the curve given by parametric equations  $x = 2 - \sin t$ ,  $y = -1 + \cos t$ ,  $-\pi/2 \leq t \leq \pi/2$ . Identify the curve by finding a Cartesian equation for it.

- (2) [2pts] Graph the set of points whose polar coordinates satisfy the inequalities

$$\frac{-\pi}{4} \leq \theta \leq \frac{\pi}{4}, \quad -1 \leq r \leq 2.$$

- (3) [5pts] Consider the curve with parametric equations  $x = 1 + e^{-t}$ ,  $y = t - t^2$ .

- (a) Find an equation for the line tangent to the curve at  $t = 0$ .  
(b) Find the area enclosed by the curve and the  $x$ -axis.

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- (2) [2pts] Graph the set of points whose polar coordinates satisfy the inequalities

$$\frac{\pi}{4} \leq \theta \leq \frac{3\pi}{4}, \quad -2 \leq r \leq 1.$$

- (3) [5pts] Consider the curve with parametric equations  $x = e^{-t}$ ,  $y = t - t^2$ .

- (a) Find an equation for the line tangent to the curve at  $t = 0$ .  
(b) Find the area enclosed by the curve and the  $x$ -axis.