Name:_____

MA 3330: Quiz 1

1. For the parametric equation

$$x = t^2 + 1, \text{ and } y = 2t$$

   (a) Graph.
   (b) Translate to rectangular.
   (c) Find equation of the tangent line at $t = 1$.
   (d) Compute area under graph from $t = 0$ to $t = 1$.

2. For the parametric equation

$$x = 2\cos(t), \text{ and } y = 4\sin(t)$$

   (a) Graph.
   (b) Translate to rectangular.
   (c) Find equation of the tangent line at $t = \pi/4$.

3. For the parametric equation

$$x = 2\sin(t), \text{ and } y = 8\sin^2(t)$$

   (a) Graph.
   (b) Compute area under graph from $t = 0$ to $t = \pi/4$.
   (c) Translate to rectangular.

4. For the function given parametrically by

$$x = 3\cos(e^t), \text{ and } y = 3\sin(e^t)$$

   Find the arclength from $t = 0$ to $t = \pi/2$.

5. Graph $r = 1 + \cos(\theta)$.

6. Find the area $r = e^{2\theta}$ from $\theta = 0$ to $\theta = 1$.

Optional. For the following points A(1,2), B(3,4) and C(-1,2)

   (a) Find the vectors $\overrightarrow{AB}$ and, $\overrightarrow{BC}$.
   (b) Find two vectors parallel to $\overrightarrow{AB}$ that is length 1.
   (c) What is the angle between $\overrightarrow{AB}$ and, $\overrightarrow{BC}$.