MA 2733
Worksheet 1 – August 26, 2015

Name _____

1. Consider the parametric curve $x = e^{-2t} - t$, $y = te^t$.

   (a) Using derivative techniques from Calc 1, find the minimum value of y attained by this curve over the t-interval $[-3, 3]$.

   (b) Set up the integral for the area between this parametric curve and the x-axis over the t-interval $[0, 2]$.

   (c) Solve the integral from part (b).

(d) Set up (but do <u>not</u> solve) an integral for the arc length of this curve over the t-interval $[0, 2]$.

2. Make a rough sketch of the curves given by the following polar equations:

(a) $r = \sin 2\theta$

(b) $r = 1 + \sin 2\theta$