MATH 255 EXAM 2

October 26, 2010

INSTRUCTIONS: This is a closed book, closed notes exam. You are not to provide or receive help from any outside source during the exam.

- *Print* your name, class, and section on the cover of your blue book.

- No calculators are allowed.

- *Print* your answers neatly in your blue book, with the questions clearly marked. Answer each question on a separate page. (All the multiple choice answers can go on one page.)

- Except on multiple choice questions *you must show your work to receive full credit.*

1. Write down the correct answer choice. There is no partial credit.

   (a) (5 points) The region formed by the lines $y = e^x$, $y = x$, $x = 0$ and $x = 2$ is rotated about the line $y = 10$. Using vertical slices, what formula represents the area of the cross section at x.
   A. $A(x) = \pi(10 - x)^2 - \pi(10 - e^x)^2$ B. $A(x) = \pi(e^x - x)^2$
   C. $A(x) = \pi(10)^2 - \pi(e^x)^2 - \pi(x)^2$ D. none of the above

   (b) (5 points) Which of the following parametric equations has a different graph than all the others.
   A. $x(t) = \cos(2t), y(t) = \sin(2t)$ B. $x(t) = \cos(e^t), y(t) = \sin(e^t)$
   C. $x(t) = \cos(t^2 + 1), y(t) = \sin(t^2 + 1)$ D. none of the above

   (c) (5 points) The following integral represents the area of which object:

   $$\int_{-9}^{9} \sqrt{81 - x^2} dx$$

   A. Equilateral triangle of side length 9   B. Circle with radius 9
   C. Semicircle with radius 9   D. none of the above