Test 2

S II, 2011

Name:

MAT 162

Gurganus

Directions: Show all work for partial credit purposes. You may use a graphing calculator. The test is closed book.

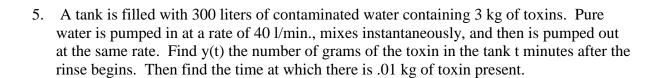
1. Use Euler's Method to approximate y(2.2) given — = 5x - 3y, and y(2) = 1. Use a stepsize of 0.1.

2. A. Find the equilibrium solutions to $- = (y-2)(y-3)^2$.

B. On a single graph, sketch three solutions to $- = (y - 2)(y - 3)^2$ for the three differential initial conditions: y(0) = 1, 2.5, and 4.

3. Find y(x), the solution to $-= x^{-1}y+x^{-1}y+1$.

4. Find y(x), the solution to $- = x^2(\cos y)^2$, y(0) = $\pi/4$.



6. First find the solution to -4 -21y = 0, y(0) = 1, y'(0) = 2.

7. Find the value of k so that $f(x) = x^{-10} + kx^{-11}$ is a probability density function on $[1,+\infty)$ and then find the value of the mean for the probability density function.

8. For $f(x) = 17 + 6x^{1.5}$, find the length of the curve y = f(x) from x = 2 to 8.

9. Find the area of the surface generated by rotating about the x-axis the graph of y = cos(x) from 0 to $\pi/4$.

10. Let A be the region bounded by y = x+4 and $y = 16-x^2$. Suppose A has a uniform mass density ρ . Find the moment about the x-axis and the moment about the y-axis.