Math 2E Quiz 6 Morning - May 5th, 2016

Name and ID: _____

Show all of your work (only writing the final answer is not enough for full credit). You can only use a pen, pencil, and eraser on the test. No calculators.

The pages are double sided.

Write Neatly. Don't spend too long on any one problem. Good Luck!

Problem 1 : _____ / 15 points

Problem 2 : _____ / 20 points

Problem 3 : _____ / 15 points

Total : _____ / 50 points

Problem 1

(a) Evaluate $\int_C xydx + \ln(x)dy$ where C is the curve $x = e^t, y = e^{-t}, 0 \leq t \leq 1$.

(b) Let D be the region bounded above by the parabola $y = 2x - x^2$ and below by the line $y = 0$. Give the two expressions for $\iint_D xydA$ as an iterated integral. (Don't evaluate).

Problem 2

Evaluate the integral $\int_{x=1}^{2}\int_{y=x/2}^{x}\frac{x}{y^2}\ \sin(\frac{\pi x}{y})dydx$ by using the change of coordinates $x = u, y = u/v$. (Take for granted this is a good change of coordinates).

Problem 3

Evaluate $\iiint_E \sqrt{x^2+y^2+z^2}\, dV$ where E lies above the cone $z = \sqrt{3(x^2+y^2)}$, and between the spheres $x^2+y^2+z^2 = 1$ and $x^2+y^2+z^2 = 4$.