Ma 227 **Exam II** **11/9/09**

Name: _____

Lecture Section: _____

I pledge my honor that I have abided by the Stevens Honor System. _____

You may not use a calculator, **cell phone**, **or computer while taking this exam**. **All work must be shown to obtain full credit**. **Credit will not be given for work not reasonably supported**. **When you finish**, **be sure to sign the pledge**.
There is a table of integrals on the last page of the exam.

Score on Problem #1 _____

#2 _____

#3 _____

#4 _____

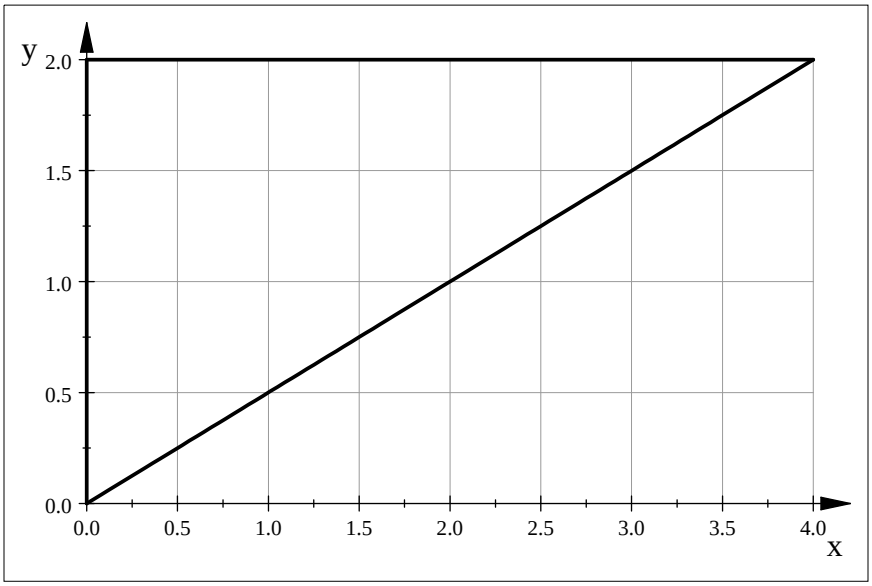
#5 _____

Total Score _____

1 [20 **pts**.] Evaluate

$$\iint_R e^{y^2}\,dA$$

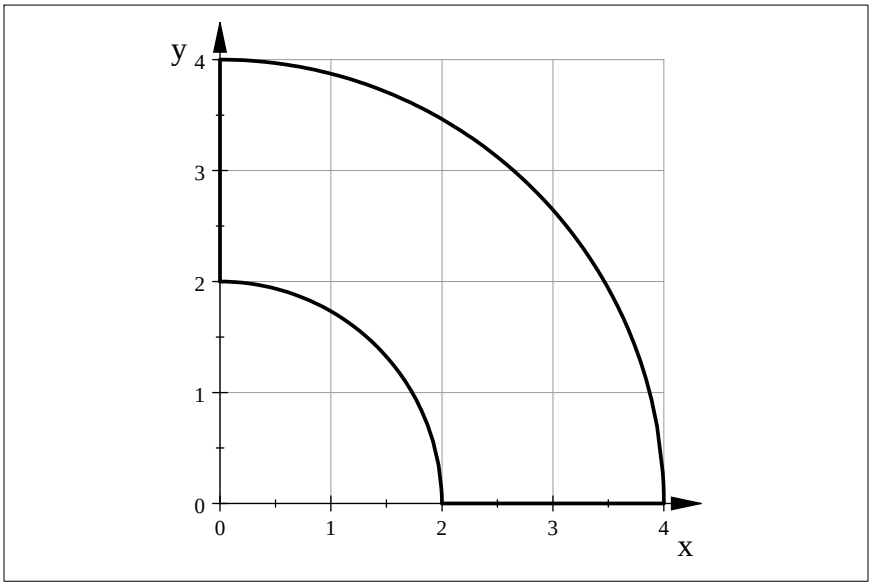
where R is the region shown below.



2 [20 **pts**.] Evaluate

$$\iint_R (x+y)\,dA$$

where R is the quarter annulus shown below. The arcs are parts of circles.



3 [20 **pts**.] Give an integral in rectangular coordinates for the surface area of the portion of the cone $z^2 = x^2 + y^2$ that lies above the circular region $x^2 + y^2 \leq 4$ in the x,y –plane and then find the surface area. Sketch the surface area to be found.

4 [20 **pts**.] Give a triple integral in **cylindrical** coordinates for the volume that lies both within the cylinder $x^2 + y^2 = 1$ and the sphere $x^2 + y^2 + z^2 = 4$. DO NOT EVALUATE THIS INTEGRAL. Sketch the volume in question.

5 [20 **pts**.] Evaluate

$$\iiint_V e^{\sqrt{x^2+y^2+z^2}}\, dV$$

where V is the part of the sphere $x^2 + y^2 + z^2 = 9$ in the first octant.

Table of Integrals

$\int \sin^2 x dx = -\frac{1}{2}\cos x \sin x + \frac{1}{2}x + C$
$\int \cos^2 x dx = \frac{1}{2}\cos x \sin x + \frac{1}{2}x + C$
$\int \sin^3 x dx = -\frac{1}{3}\sin^2 x \cos x - \frac{2}{3}\cos x + C$
$\int \cos^3 x dx = \frac{1}{3}\cos^2 x \sin x + \frac{2}{3}\sin x + C$
$\int te^t dt = e^t(t-1) + C$
$\int t^2 e^t dt = e^t\left(t^2 - 2t + 2\right) + C$