

31 March 2006

Name: _____

DIRECTIONS: Answer the following questions or execute the following commands below. You may NOT use a calculator. Remember, you are an attorney and I am a jury of 12 people. You must convince me beyond a reasonable doubt that your answers are correct by showing work and *writing neatly*. Should you have any questions, do not hesitate to ask them. There are questions on the back!

1. Consider the double integral

$$\int_0^2 \int_0^y x^2 y \, dx dy.$$

- (a) Sketch the region of integration.
- (b) Evaluate the integral.

2. Find the volume of the solid above the *polar* rectangle

$$R = \left\{ (r, \theta) : 1 \leq r \leq 3, 0 \leq \theta \leq \frac{\pi}{4} \right\}$$

and under the surface $z = e^{x^2+y^2}$.

3. Explain what the Latin phrase *caveat emptor* means in English.