Name:	
4-digit code:	

- Write your name and the last 4 digits of your SSN in the space provided above.
- The test has four (4) pages, including this one.
- The test is fifty (50) minutes long.
- Enter your answer in the box(es) provided.
- You must show sufficient work to justify all answers unless otherwise stated in the problem. Correct answers with inconsistent work may not be given credit.
- Credit for each problem is given in parentheses at the right of the problem number.
- No books, notes or calculators may be used on this test.

Page	Max. points	Your points
2	30	
3	30	
4	40	
Total	100	

Problem 1 (15 pts). Calculate the double integral $\iint_R \frac{1+x^2}{1+y^2} dA$, for the rectangle $R = [0,1] \times [0,1]$.

Problem 2 (15 pts). Use a double integral to compute the volume under the surface z = xy and above the region bounded by $x = y^2$ and $x = y^3$.

Problem 3 (15 pts). Evaluate $\iint_R (3x + 4y^2) dA$, where R is the region in the upper half-plane bounded by the circles $x^2 + y^2 = 1$ and $x^2 + y^2 = 4$.

Exam#3.

Problem 4 (15 pts). Electric charge is distributed over the square $\{(x,y): 0 \le x \le 1, 1 \le y \le 2\}$ so that the charge density at ((x,y) is $\sigma(x,y) = e^{x+e^x}$ (measured in Coulombs per square meter). Find the total charge of the disk.

Problem 5 (40 pts). A rectangular box without a lid is to be made from $12\,\mathrm{m}^2$ of cardboard. Find the maximum volume of such a box.