Final Examination [40 points], Monday, June 7, Spring 2010
MATH 210 Calculus III, Section 01, Dr. Masayoshi Kaneda
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Name (Printed):

Student ID:

The quiz will be first graded out of 68 points, and then the score is converted to be out of 40 points.

1. (Exercise 12.7.37, homework, covered in lab) [18 points] Find the absolute extrema of the function $f(x, y) = x^2 + 3y - 3xy$ on the region bounded by $y = x$, $y = 0$, and $x = 2$.

2. (Exercise 13.1.55, homework) [7 points] Evaluate the iterated integral by first changing the order of integration.

$$\int_0^1 \int_y^1 3xe^{(x^3)}dx\ dy$$

3. (Exercise 13.2.17, homework, covered in lab) [10 points] Computed the volume of the solid lying in the first octant bounded by $z = 1 - y^2$, $x + y = 1$, and three coordinates planes.

4. (Example 13.3.4, covered in lecture, modified) [12 points] Evaluate the iterated integral.

$$\int_0^1 \int_0^{\sqrt{1-x^2}} x^2(x^2 + y^2)^2 dy\ dx$$

5. (Example 13.5.2, covered in lecture) [21 points] Evaluate $\iiint_Q 6xy \, dV$, where Q is the tetrahedron bounded by the planes $x = 0$, $y = 0$, $z = 0$, and $2x + y + z = 4$.