HOMEWORK 6, MATH 175 - FALL 2009

DUE MONDAY OCTOBER 26TH (AT THE BEGINNING OF CLASS)

This homework assignment covers Sections 15.7, and 16.1-16.2 in the book.

1. Find the local maximums, minimums, and saddle points of the function $f(x,y) = e^{4y-x^2-y^2}$.

2. Find the local maximums, minimums, and saddle points of the function $f(x,y) = \sin x \cos y$.

3. Find the absolute maximum and minimum of the function $f(x,y) = 3x^2 + 2y$ on the set $D = \{(x,y) \mid x^2 + y^2 \leq 2\}$.

4. Find the absolute maximum and minimum of the function $f(x,y) = (x-y)/(x^2+y^2)$ on the set $D = \{(x,y) \mid 1 \leq x^2 + y^2 \leq 2\}$.

5. Find the absolute maximum and minimum of the function $f(x,y) = x^2 + y^2 - 2(x+y)$ on the set $D = \{(x,y) \mid 0 \leq x \leq 2, 0 \leq y \leq 2\}$.

6. Calculate the iterated integral $\int_0^1 \int_1^2 (1 + 2xy) dx dy$.

7. Calculate the double integral $\iint_R \sin(x-y) dA$, where $R = \{(x,y) \mid 0 \leq x \leq \pi, 0 \leq y \leq \pi/2\}$.

8. Find the volume of the solid enclosed by the surface $z = 1 + e^x \sin y$ and the planes $x = \pm 1$, $y = 0$, $y = \pi$, and $z = 0$.