MATH 410 Dr. Wolfe ASSIGNMENT #8 Due November 8 , 2006

1. Consider the partition $P = \{0,\ 1/4,\ 1/2,\ 1\}$ of the interval $[0, 1]$. Compute $L(f, P)$ and $U(f, P)$ for the following three choices of functions $f : [0, 1] \to \mathbf{R}$.
(a) $f(x) = x$.
(b) $f(x) = 5$.
(c) $f(x) = -x^2$.

2. Suppose that the bounded function $f : [a, b] \to \mathbf{R}$ has the property that for each rational number x in the interval $[a, b]$, $f(x) = 0$. Prove that

$$\underline{\int_a^b} f(x)\,dx \leq 0 \leq \overline{\int_a^b} f(x)\,dx$$

3. Ex. 2, Sec. 7.1, *Cooper.* Note that there is a misprint in this problem. You need to change all the $y's$ to $x's$. For simplicity, assume $n = 2$.

4. Ex. 3, 4, 5, 7, Sec. 7.1 *Cooper.*

5. Ex. 1, Sec. 7.2 *Cooper.*