MATH 150A **Calculus I** **Fall 2007**

Homework 9

Due: Thurs. Nov. 15, 2007

Section 5.1, pg. 299: 3, 17, 20, 21.
Section 5.2, pg. 310: 3, 11, 17, 21, 29, 35, 53.
Section 5.3, pg. 321: 5, 7, 19 – 25 (odds), 35.

Additional Problems:

1. Prove:

$$\sum_{i=1}^{n}(a_i + b_i) = \sum_{i=1}^{n} a_i + \sum_{i=1}^{n} b_i$$

2. Prove:

$$\sum_{i=1}^{n} i^2 = \frac{n(n+1)(2n+1)}{6}$$

Hint: Consider the telescoping sum $\sum_{i=1}^{n}[(i+1)^3 - i^3]$, and (1) expand the terms $(i+1)^3 - i^3$ so that you can split the original sum into three different sums involving i^2, i and 1, then (2) compute it using the telescoping sum formula, $\sum_{i=1}^{n}(a_{i+1} - a_i) = a_{n+1} - a_1$, and (3) compare your two results and solve for $\sum_{i=1}^{n} i^2$.

3. Prove:

$$\int_a^b (f(x) + g(x))\,dx = \int_a^b f(x)\,dx + \int_a^b g(x)\,dx$$

Extra Credit. If you turn in problem # 40 on appendix E (pg. A38), I will add up to 10 points to your Midterm 2. You can work on the problem with somebody else, but you should turn in your own solution.