• Homework I, §4.1, #53 and §4.2 # 25 and the additional problem below.

Additional problem. Use the method of example 5, page 260 to evaluate the sum:

$$\sum_{k=1}^{n} k.$$

Hint: First find the sum  $\sum_{k=1}^{n} (2k-1)$ . Begin with  $(k)^2 - (k-1)^2 = 2k - 1$ . Homework I is due on Wednesday, 23 April 2003.

- We will have a quiz on Thursday, 24 April 2003. This quiz will cover section 4.4, the fundamental theorem of calculus.
- The final exam will be 6-8 pm Thursday, 8 May 2003 in room 106 of the White Hall Classroom Building. The exam will be approximately equally divided between material from the first three exams and material covered after the third exam. As a first step you should review your solutions to the first three exams.
- A puzzle. If we try to use the fundamental theorem of calculus to evaluate

$$\int_{-2}^{1} \frac{1}{x^2} \, dx$$

We obtain

$$\int_{-2}^{1} x^{-2} \, dx = -x^{-1} \Big|_{x=-2}^{1} = -1 + \frac{1}{2} = -\frac{1}{2}.$$

The function  $1/x^2$  is always positive, so the value of the integral should be positive. Is there a mistake? Where?

April 20, 2003