Homework 1 – due 02/04/04

Math 406

This problem set covers material from sections 1.1-1.3 of the book by Rosen. On your quiz, you may see some of the problems numbered 1-5. On your exams, you will be held responsible for any of the recommended problems as well (among other things).

Recommended Problems:
> 1.1: #3, 4, 6, 19.
> 1.2: #14, 32, 33.
> 1.3: # 3, 22, 29

Problems that could appear on the quiz:

1. Prove by induction the formulas

   (a) $\sum_{i=1}^{n} i^2 = \dfrac{n(n+1)(2n+1)}{6}$.

   (b) $\sum_{i=1}^{n} i^3 = \dfrac{n^2(n+1)^2}{4}$.

2. Find and prove a formula for the following expressions

   (a) $1 + 3 + 5 + \cdots + 2n - 1$.

   (b) $1 + 4 + 7 + 10 + \cdots + 3n - 2$.

3. Sec. 1.2: #10, 22.

4. Sec. 1.2, # 13.

5. Sec. 1.3, #6,7.