Homework
due on Tuesday, February 22

Read carefully sections 4.4-4.6 in the book. Solve the following problems.

Problem 1. Let F_n denote the n-th Fibonacci number. Prove that

$$F_2 + F_4 + \cdots + F_{2n} = F_{2n+1} - 1$$

for any natural number n. Conjecture and prove a similar formula for $F_1 + F_3 + \cdots + F_{2n-1}$.

Problem 2. A sequence a_n of real numbers satisfies a recurence relation

$$a_{n+1} = \sqrt{a_n + 2}.$$

Suppose that $a_1 > 2$. Prove that $a_n > 2$ for every n. Prove furthermore that $a_{n+1} < a_n$ for every n.

Problem 3. In class I sketched a solution to Project 4.33 in the book. Write down a detailed solution.