Homework

due on Friday, February 18

Read carefully sections 4.2-4.5 in the book. Solve the following problems.

Problem 1. Write the row of Pascal triangle which corresponds to $n = 7$ Prove by induction that $7|n^7 - n$ for every natural number n. Conclude that the same is true for every integer n.

Problem 2. The sequence x_n is defined recursively as follows:

$$x_0 = 0, \ x_1 = 2, \ x_{n+1} = 2x_n - x_{n-1} + 2.$$

Prove by induction that $x_n = n^2 + n$.