Name: _____

Time of your discussion section: _____

CS311: Discrete Math for Computer Science, Spring 2015

Homework Assignment 4, Due February 27

1. Find coefficients a, b, c, d such that formula (5) from Part 3 of Lecture Notes is satisfied for all values of n.

2. (a) Find a formula for

$$\frac{1}{1 \cdot 2} + \frac{1}{2 \cdot 3} + \cdots + \frac{1}{n \cdot (n+1)}$$

by examining the values of this expression for small values of n. (b) Prove the formula you conjectured in part (a).

3. (a) Find a formula for

$$1 \cdot 1! + 2 \cdot 2! + \cdots + n \cdot n!$$

by examining the values of this expression for small values of n. (b) Prove the formula you conjectured in part (a).

4. Prove that for every nonnegative integer n

$$\sum_{i=1}^{n} i2^i = (n-1)2^{n+1} + 2.$$