Math 475 Homework 8
Due April 22nd, 2009

1. Find the triangular numbers in Pascal's Triangle. Explain why the pattern continues forever.

2. Identify the skew-diagonals of Pascal's Triangle which sum to the Fibonacci numbers. Explain why this pattern continues forever.

3. Use nth differences to prove the sum of every nth row of Pascal's Triangle is 2^n (assuming the "1 1" row is the first row).

4. Describe every function $f : \mathbb{Z} \to \mathbb{R}$ that is equal to its own first difference function and prove there are no others.