Math 165: Honors Calculus I Name:_____
Quiz 2 *September 9, 1999*

1. Prove the TRIANGLE INEQUALITY: For any real numbers x, y,

$$|x + y| \leq |x| + |y|$$

(You may assume that $|x| \leq a \iff -a \leq x \leq a$ for any $a \geq 0$.)

2. Using the basic properties of summation, including the telescoping sum property, prove that for any positive integer n and real number x:

$$(x - 1) \sum_{k=0}^{n} x^k = x^{n+1} - 1$$

3. State the Binomial Theorem. Be sure to carefully define all symbols used (do *not* use "...").