Math 165: Honors Calculus I Name:_____
Quiz 1 *Sep. 3, 1998*

1. a) Prove using only the axioms for the real numbers that $a \cdot 0 = 0$ for any $a \in$.

   b) Define $-c$ for a real number $c \in$.

   c) Prove using only the axioms for the real numbers and parts a) & b) that $(-a)b = -(ab)$ for any real numbers a, $b \in$.

2. Give precise definitions for the following:

   a) an inductive set, S.

   b) the positive integers, .

c) $\sum_{k=1}^{n} a_k$.

3. Use the Principle of Mathematical Induction to prove

$$\sum_{k=1}^{n} k^3 = \Big(\sum_{k=1}^{n} k\Big)^2$$