Name, Last Name: **Grade:**

Student No:

Math 103: Quiz # 9

Spring 2007

<u>You have 40 minutes.</u>

1. Give the definition of the following terms.

   a) A countably infinite set.   (5 points)

   b) A countable set.   (5 points)

2. Let A be a set and B be a proper subset of A. Prove that if A is equivalent to B, then A must be an infinite set.   (25 points)

3. Prove that every two countably infinite sets are equivalent.. (25 points)

4. Let $A := \left\{ \frac{1}{n} \mid n \in \mathbb{Z}^+ \right\}$. Prove that A is a countably infinite set. (30 points)