Math 104, Section 6 **Fall 2003**
Sarason

HOMEWORK ASSIGNMENT 2

Due in class on Wednesday, September 10.

A. Let the sets A and B have the same cardinality. Let a_0 be an element of A and b_0 an element of B. Prove that the sets $A\backslash\{a_0\}$ and $B\backslash\{b_0\}$ have the same cardinality. (Suggestion: Since card $A =$ card B, there is a one-to-one function f of A onto B. Use f to construct a one-to-one function g of $A\backslash\{a_0\}$ onto $B\backslash\{b_0\}$.)

B. Prove that the set of functions of $\mathbb{N}_m$ into $\mathbb{N}_n$ has cardinal number n^m. (Suggestion: Fix n and use induction on m.)

C. Prove that the set of finite subsets of $\mathbb{N}$ is countable. (Suggestion: Any finite subset of $\mathbb{N}$ is contained in $\mathbb{N}_n$ for some n.)