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 $A\setminus\{a_0\}$ and $B\setminus\{b_0\}$ have the same cardinality. (Suggestion: Since $\text{card } A = \text{card } B$, there is a one-to-one function $f$ of $A$ onto $B$. Use $f$ to construct a one-to-one function $g$ of $A\setminus\{a_0\}$ onto $B\setminus\{b_0\}$.)

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 $n$.)