Math 300C **Introduction to Mathematical Reasoning** **Fall 2011**

Assignment #9 Part C: Due Wednesday, 12/7/11

A-1. Prove that if $B \subseteq A$, A is uncountable, and B is countable, then $A \setminus B$ is uncountable.

A-2. For each of the sets below, decide whether it is finite, denumerable, or uncountable, and prove your answer correct.

(a) $(0, 1]$.

(b) $\{1/n : n \in \mathbb{Z}^+\}$.

(c) $(0, 1] \setminus \{1/n : n \in \mathbb{Z}^+\}$.

(d) $\mathbb{R} \times \mathbb{Z}$.

(e) $\{x \in \mathbb{Q} \mid -1 < x < 1\}$.