

Assignment #9

Due 5/31/06

Reading

- *None this week. No reading report required.*

Part I

- A. Page 143, Exercise 11.6.
- B. Page 181, Exercises 14.1, 14.2.

Part II

Give a complete proof for each of the following problems.

- C. If X contains an infinite subset, prove that X is infinite.
- D. If X contains an uncountable subset, prove that X is uncountable.
- E. If X is uncountable and A is a countable subset of X , show that $X - A$ is uncountable.
- F. Determine whether each of the following sets is empty, finite but nonempty, denumerable, or uncountable. No proofs necessary.
 - (a) $\{1/n : n \in \mathbb{Z}^+\}$.
 - (b) $\mathbb{R} - \mathbb{Q}$.
 - (c) $\mathbb{Z} \times \mathbb{R}$.
 - (d) $[0, \infty)$.
 - (e) $\{x \in \mathbb{R} : x^2 \in \mathbb{Z}\}$.

Part III

With your writing group, write final drafts of all portfolio problems that have been assigned so far. Each group should bring one copy of their writeups to class on Friday, June 2 (the last day of class), along with all marked-up previous drafts.