

Name: _____

PanthID: _____

Homework 5 MAA 3200

Due Thursday, Dec.3

1. (10 pts) (Pb. 29, page 224 textbook) Prove that every subset of a countable set is countable. (Feel free to use Lemma 7.9.)

2. (10 pts) (Pb. 35, page 225 textbook.) Let X be a nonempty set. Show that $\mathcal{P}(X)$ and 2^X have the same cardinality. (2^X denotes the set of all functions mapping X to $\{0, 1\}$ - see textbook page 224.)

For this exercise, you are **not** allowed to use the Schroeder-Bernstein theorem. You should find explicitly a bijection between $\mathcal{P}(X)$ and 2^X .