York University   EECS 2001   July 13, 2015

Homework Assignment #8
Due: July 29, 2015 at 7:00 p.m.

1. Prove the following statements.

  (a) A set A is countable if and only if there is a one-to-one function $f : A \to \mathbb{N}$.

  (b) If A and B are countable sets, then $A \cup B$ is countable.

  (c) For all positive integers n, if $A_1, \ldots, A_n$ are countable sets then $\bigcup_{i=1}^{n} A_i$ (the union of all of the A_i's) is countable.

2. Is the following statement true? For all languages L and L', if $L' \subseteq L$ and L is recognizable, then L' is recognizable. Prove your answer is correct.