# Theory of Computation

Homework 4
Due: 2008/05/22

**Problem 1.** Show that if NP $\neq$ coNP, then NP $\neq$ NL. (Hint: The Immerman-Szelepscényi theorem implies NL = coNL.)

**Problem 2.** Let $k$ be a positive integer which is not a multiple of 13. Show that if $k^5 = 1 \bmod 13$, then $k = 1 \bmod 13$. (Hint: Fermat's little theorem implies $k^{12} = 1 \bmod 13$.)