Assignment 8

(Please work in dozens and submit one answer sheet for the dozen.)

1. Show that if $P = NP$, then there is a polynomial-time algorithm to find a maximum clique in a graph.

2. (a) If $L \in P$ and $L \leq_p M$, what can one conclude about $M$?
   (b) If $L \in NP$ and $SAT \leq_p L$, what can one conclude about $L$?

3. Let $A$ be the set of all strings of the form $www$ (with binary alphabet). Show that $A$ is decidable in linear time and that $A$ is in $\mathcal{L}$.
   - [Text 20.5] Show that one can determine in polynomial space whether $R$ and $S$ are equivalent regular expressions.
   - [Text 21.5] Show that $Empty_{NFA}$ is in $\mathcal{NL}$.
   - [Text 21.6] Is $HAMPATH$ in $\mathcal{NL}$? In $\mathcal{L}$? Explain.

Due: Tuesday December 1