CSCI 3130 Formal Languages and Automata Theory

Week 13 Tutorial Session

- (1) Prove that the following languages are NP-complete:
 - (a) $L_1 = \{\langle \varphi \rangle \mid \varphi \text{ is a boolean formula with at least two satisfying assignments}\}$
 - (b) HALF-CLIQUE = { $\langle G \rangle$ | G is a graph on n vertices containing a clique of size at least n/2}
- (2) Suppose some polynomial-time algorithm A decides the *decision* problem

 $CLIQUE = \{ \langle G, k \rangle \mid \text{Graph } G \text{ contains a clique of size } k \}.$

Using A, give a polynomial-time algorithm to search for a clique of size k in a graph G, whenever such a clique exists.