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) $\textsc{Half-Clique} = \{\langle G\rangle \mid G \text{ is a graph on } n \text{ vertices containing a clique of size at least } n/2\}$

(2) Suppose some polynomial-time algorithm A decides the *decision* problem

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

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