CMPT-405/705

March 4, 2016

ASSIGNMENT #6

Problem 1.

Let DOUBLESAT = $\{f | f$ is a boolean formula and f has at least two satisfying assignments $\}$. Prove that DOUBLESET is NP-Complete.

Problem 2.

Show the language HALF-CLIQUE = $\{G | G$ is an undirected graph with n nodes which has a complete subgraph of $n/2$ nodes$\}$ is NP complete.

Problem 3.

Consider the SET-PARTITION problem, in which you are given as input a set S of integer numbers. The question is whether the numbers can be partitioned into two sets A and $\overline{A} = S - A$ such that $\sum_{x \in A} x = \sum_{x \in \overline{A}} x$. Show that SET-PARTITION is $\mathcal{NP}$-complete.

Problem 4.

Show that the **hamiltonian-path problem** (note the "path" rather than "cycle") is $\mathcal{NP}$-complete.