INDE 597
Homework 3
Due date 3/4

1) A *clique cover* of a graph $G = (V, E)$ is a partition of V into cliques. An *independent set S* of G is a set of vertices such that there are no edges between any two vertices in S. Show that the problem of finding a maximum cardinality independent set is dual to the problem of finding a minimum cardinality clique cover.

2) Some professors go to a conference and each professor brings along one student. Among them are Prof. Smith and his student Lin. At the conference reception, the professors and students mingle and talk to each other, but no professor talks to their own student. At the end of the reception, Prof. Smith asks the other attendees how many people they talked to during the reception, and each person gives him a different answer. On the way home, Prof. Smith says that he knows exactly which people Lin talked to at the reception. How does he know that?

3) Is the following problem in P or NP-Complete? Prove your answer.

MAX INDEPENDENT SET IN TREES
Instance: A tree T and an integer k
Question: Does T have an independent set of size at least k?