Homework today is short. I hope that's okay with you. :)

In class we proved that if $A \leq_p B$ and $B \in P$, then $A \in P$. This first problem addresses the analogous question for NP.

A. If $A \leq_p B$ and $B \in NP$, then must it be true that $A \in NP$? Prove your answer.

Problem B is about our polynomial-time mapping reduction of $3SAT$ to $CLIQUE$. I want you to be in the habit of working examples, because otherwise this material can be pretty confusing.

B.A. Give a satisfiable four-clause Boolean formula in 3CNF. Show how it produces a $\langle G, k \rangle \in CLIQUE$.

B.B. Give an unsatisfiable four-clause Boolean formula in 3CNF. Show how it produces a $\langle G, k \rangle \notin CLIQUE$.