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.

In class, we have done two examples of specific polynomial-time mapping reductions: reducing $3SAT$ to $CLIQUE$ and to $VERTEX$-$COVER$. A third example is the construction of Theorem 7.56, which reduces $3SAT$ to $SUBSET$-SUM. You are not required to read it right now, but consider doing so, because these constructions get easier as you see more of them. And this next problem asks you to do your own reduction.

B. Do problem 7.26 (which is about reducing $3SAT$ to $\neq SAT$).