HOMEWORK 2

(1) Give natural deduction proofs of the following statements.
   (a) $\neg(A \vee B) \to (A \to \neg B)$
   (b) $\neg A \wedge \neg B \to \neg(A \vee B)$
   (c) $A \leftrightarrow B \vdash \neg A \leftrightarrow \neg B$
   (d) $(A \to B) \to (\neg B \to \neg A)$
   (e) $((A \to B) \to A) \to A$

(2) Show that $A \to B$, $\neg A \vee B$, and $\neg(A \wedge \neg B)$ are logically equivalent by writing out truth tables and showing they are the same.

(3) Write out the truth table for $(A \to B) \vee (B \vee C \to A)$.