Logic 1, WS 2012. Homework 5, given Jan 10, due Jan 17.

1. Find out the sequent rule for disjunction in the goal, using the $\neg\wedge$ sequent calculus.

2. Find out the sequent rule for implication in the goal, using the $\neg\wedge$ sequent calculus.

3. Prove by propositional sequent calculus: $(A \Rightarrow C) \vee (B \Rightarrow C) \vdash (A \wedge B) \Rightarrow C$. Check if this proof must be modified for single-goal sequent calculus.

4. Prove by predicate logic sequent calculus: $(\exists_x P[x]) \Rightarrow Q \vdash \forall_x(P[x] \Rightarrow Q)$. Check if this proof must be modified for single-goal sequent calculus.

5. Optional: Prove by propositional sequent calculus the equivalence between the formulae $(A \Rightarrow C) \wedge (B \Rightarrow C)$ and $(A \vee B) \Rightarrow C$. Check if these proofs must be modified for single-goal sequent calculus.