Logic 1, WS 2007. Homework 2, given Oct 18, due Oct 25

1. Prove the correctness and the reversibility of the sequent rule for negation in the conclusions.

2. Prove the correctness and the reversibility of the sequent rule for conjunction in the assumptions.

3. Find the sequent rule for disjunction in the assumptions, by using the rules of the small calculus for negation and conjunction.

4. Find the sequent rule for "modus tollens" (the assumptions contain an implication and the negation of the conclusion of the implication), by using the rules for negation, conjunction, and disjunction.

5. Using unique–goal sequent calculus, prove the formula:

$$((A \Rightarrow C) \vee (B \Rightarrow C)) \;\Rightarrow\; ((A \wedge B) \Rightarrow C).$$