Tik-79.144 **Syksy 1998**
Logic in Computer Science: Foundations
Exercise 3
29.9. ja 1.10.1998

1. Use semantic tableaux to prove following propositions

a) $A \to (B \to B)$,

b) $(A \to B) \wedge (B \to C) \to (A \to C)$,

c) $(A \to B) \wedge (A \to C) \to (A \to B \wedge C)$ ja

d) $(A \to C) \wedge (B \to C) \wedge (A \vee B) \to C$.

2. Find the disjunctive and conjunctive normal forms for proposition $\neg((A \leftrightarrow \neg B) \to C)$

a) using transformation procedure

b) using semantic tableaux.

3. Design an atomic tableaux for connective "exclusive or" $A \underline{\vee} B$, which is true if exactly one of the operands is true. Use the new tableaux to prove proposition

$$\neg A \wedge \neg B \to \neg(A \underline{\vee} B).$$