Homework 5
Mathematical foundations of informatics (II01, 2008)
Instructor: Tang

(This HW will be collected on 10/8 Wed. in the class. Write LEGIBLY and explain your answers clearly.
The homework you hand in must be your own work, IN YOUR OWN WORDS and your own explanation.
**NO late homework will be accepted.**)

1. (50 pts) Give natural deduction proofs for the following sequents.
   a. $A, A \rightarrow B, B \rightarrow C \vdash A \land C$
   b. $A \rightarrow B \vdash A \rightarrow B$
   c. $\vdash A \rightarrow (B \rightarrow A)$
   d. $A \land B \rightarrow (C \land D), A \vdash B \rightarrow D$
   e. $A \rightarrow (B \rightarrow C) \vdash (A \land B) \rightarrow C$
   f. $A \land \neg B \vdash \neg (A \land B)$
   g. $(A \land B) \rightarrow C \vdash A \rightarrow (B \rightarrow C)$
   h. $A \rightarrow B \vdash \neg B \rightarrow \neg A$
   i. $A \rightarrow B, \neg B \vdash \neg A$
   j. $A, A \rightarrow C, C \rightarrow (D \land E) \vdash E$