

Math 2001 Homework 03

Due date: 6 Feb (start of class)

When constructing proofs in natural deduction, use only the list of rules given in Section 3.1.

1. Give a natural deduction proof of $A \wedge (A \rightarrow B) \rightarrow B$.
2. Give a natural deduction proof of $A \rightarrow \neg(\neg A \wedge B)$.
3. Give a natural deduction proof of $\neg(A \wedge B) \rightarrow (A \rightarrow \neg B)$.
4. Give a natural deduction proof of $(A \vee B) \wedge (A \rightarrow C) \wedge (B \rightarrow D) \rightarrow C \vee D$.
5. Give a natural deduction proof of $\neg(A \leftrightarrow \neg A)$.