1 Computazional Logic 2008 - Dr G.Bellin

Coursework 1. Read pages (13-18) of the Lecture Notes on Proof Theory (Normal Proofs excluded). A *deduction* of A from Γ in Natural Deduction is a derivation with conclusion A where all non-discharged assumptions are in Γ . A *proof* of A is a deduction of A where all premises are discharged.

Remember that $\neg A =_{df} A \rightarrow \bot$.

Write proofs of the following formulas:

- (a) $(A \to \neg B) \to (B \to \neg A)$
- (b) $(A \to B) \to (\neg B \to \neg A)$
- (c) $(\neg B \rightarrow \neg A) \rightarrow (A \rightarrow \neg \neg B)$
- (d) $((A \land B) \to C) \to (A \to (B \to C))$

(e)
$$(A \to (B \to C)) \to ((A \land B) \to C)$$

(f) $((A \to \neg B) \to A) \to (\neg \neg A).$

Model solutions: