

Language and Logic
Exercise 10: Natural Deduction

Tutor: Dr. Mark Lee

Deadline: **Monday 5th December 2011 12 pm**

Submissions should be deposited in the Language \wedge Logic pigeon hole. Please write or type your answers clearly and then submit with a work slip stapled to the paper. Clearly indicate your academic advisor.

The problems below are all taken from last year's exam paper and are a good guide to what you should expect in Question 4. If you find this easy then you have nothing to fear! Use only the rules of natural deduction we've covered in the module.

a. $\forall x [Fx \rightarrow (Gx \rightarrow Hx)], Ga : \exists x [Fx \rightarrow Hx]$

[3%]

b. $\exists x [(Ax \wedge Bx) \rightarrow Cx], \forall x[Bx] : \exists x [Ax \rightarrow Cx]$

[4%]

c. $\forall x [Fx \rightarrow (Hx \wedge Jx)], \forall x[\sim(Hx \wedge Jx)] : \forall x [\sim Fx]$

[3%]

The exam in May will take 90 minutes. Question 4 is worth 25% of the total mark so the above three questions should take you ~20 minutes to complete. For the rest of the week, please prepare for the class test next Monday ...