

Exercise 9

Predicate Logic Proofs

Tutor: Dr. Mark Lee

Due: Monday 28th of November 2011 12 pm.

Please submit your work with a completed and stapled worksip and put it in the Language and Logic Pigeon Hole.

(All of these questions appeared on previous exam papers. They're a pretty good guide to the level of difficulty you should expect in May)

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

[2]

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

[2]

3. $\forall x [Fx \rightarrow Bx], \forall x [Bx \rightarrow Ex] : \forall x [Fx \rightarrow Ex]$

[2]

4. $\forall x [Dx \vee Bx], \forall x [Dx \rightarrow Bx] : \forall x [Bx]$

[2]

5. $\exists x [Rx \wedge Kx], \forall x [Kx \rightarrow Lx] : \exists x [Rx \wedge Lx]$

(**hint:** notice the existential in the premises and the conclusion. If you don't yet understand "EI before EE" then please re-read my lecture notes from Monday until you do.)

[2]