

Homework 6

Show that the following arguments are valid by constructing proofs. You may use any of the basic inference rules — i.e. the propositional calculus rules, plus EE, EI, UE, and UI. You may also use SI/TI with things proved in chapters 1&2, with things that you’ve proved in this problem set, and with things that have been proved in the lectures. (Note: “ P ” stands for an arbitrary sentence.)

1. $\forall x((Fx \wedge Gx) \rightarrow Hx), \neg \exists x Hx \vdash \forall x(Fx \rightarrow \neg Gx)$
2. $\forall x Fx \rightarrow P \vdash \exists x(Fx \rightarrow P)$
3. $\vdash \exists x(Fx \rightarrow \forall y Fy)$
4. $\forall x \exists y(Fx \rightarrow Gy) \vdash \exists y \forall x(Fx \rightarrow Gy)$
5. $\vdash \forall x \exists y(Rxy \rightarrow Ryx)$