

Intermediate Logic

Homework 1

Solutions are due by Friday at 5pm. Please either email solutions to hhalvors@princeton.edu or drop in the PHI 312 inbox between 1879 and Marx Halls.

1. Prove that $\neg\phi \vee \psi \Rightarrow \phi \rightarrow \psi$. (Do not assume that \Rightarrow agrees with \models .)
2. Let P, Q, R be 0-place predicate symbols. Show that $P \rightarrow (Q \rightarrow R) \not\models (P \rightarrow Q) \rightarrow R$.
3. Prove that $\neg\forall x\phi(x) \models \exists x\neg\phi(x)$. (Do not assume that \Rightarrow agrees with \models .) In other words, you need to show that for any structure M , if $M \models \neg\forall x\phi(x)$ then $M \models \exists x\neg\phi(x)$.