

LGIC 010 & PHIL 005

Problem Set 10

Spring Term, 2010

For each of the following pairs consisting of a set of schemata X and a schema S determine whether X implies S . If so, provide a deduction to establish the implication. If not, specify a structure which makes S false and all the schemata in X true.

1. $X : \{(\forall x)Rxx, \neg(\forall x)(\forall y)Rxy\}$
 $S : \neg(\exists x)(\forall y)x = y$
2. $X : \{(\exists x)(\forall y)(Fy \equiv x = y), (\exists x)(\forall y)(\neg Fy \equiv x = y)\}$
 $S : (\exists x)(\exists y)(x \neq y \wedge (\forall z)(x = z \vee y = z))$
3. $X : \{(\forall x)(Fx \supset (\exists y)(\neg Fy \wedge (\forall z)(Rxz \equiv z = y))), (\forall x)(\neg Fx \supset (\exists y)(Fy \wedge (\forall z)(Rzx \equiv z = y)))\}$
 $S : p \wedge \neg p$
4. $X : \{(\forall x)(Fx \supset (\exists y)(\neg Fy \wedge (\forall z)(Rxz \equiv z = y))), (\forall x)(\neg Fx \supset (\exists y)(Fy \wedge (\forall z)(Rzx \equiv z = y))), (\forall x)(\forall y)(\forall z)((Pxy \wedge Pxz) \supset y = z), (\forall x)(\exists y)(Fy \wedge Pyx)\}$
 $S : p \wedge \neg p$