

LGIC 010 & PHIL 005

Problem Set 10

Spring Term, 2009

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. $X : \{(\forall x)(\forall y)(Rxy \supset \neg Ryx), (\forall x)(\exists y)(\exists z)(Rxy \wedge Rxz \wedge Ryz),$
 $(\exists x)(\exists y)(\forall z)(x = z \vee y = z)\}$
 $S : p \wedge \neg p$
2. $X : \{(\exists x)Fx \wedge (\exists x)\neg Fx, (\forall x)(\forall y)(x = y)\}$
 $S : p \wedge \neg p$
3. $X : \{(\forall x)\neg Rxx, (\forall x)(\forall y)(x = y \vee Rxy \vee Ryx), (\forall x)(\forall y)(\forall z)(Rxy \supset (Ryz \supset Rxz)),$
 $(\forall x)(\exists y)(Rxy \wedge (\forall z)\neg(Rxz \wedge Rzy)), (\forall x)(\exists y)(Rxy \wedge (\forall z)(Rzy \supset (\exists w)(Rzw \wedge Rwy)))\}$
 $S : p \wedge \neg p$
4. $X : \{(\forall x)\neg Rxx, (\forall x)(\forall y)(Rxy \supset Ryx), (\exists x)(\exists y)(x \neq y),$
 $(\forall x)(\forall y)(x \neq y \supset ((\exists z)(Rxz \wedge Ryz) \wedge (\exists z)(\neg Rxz \wedge Ryz) \wedge (\exists z)(\neg Rxz \wedge \neg Ryz)))\}$
 $S : p \wedge \neg p$