PHIL 155: Introduction to Mathematical Logic

Assignment Six—Fitch proofs with Quantifiers

1. Do exercises 13.2, 13.9, 13.12 and 13.16.

2. Here are some well-known properties of dyadic (2-place) relations:

$\forall x R(x,x)$	(Reflexivity)
$\forall x \neg R(x,x)$	(Irreflexivity)
$\forall x \forall y (R(x,y) \to R(y,x))$	(Symmetry)
$\forall x \forall y (R(x,y) \to \neg R(y,x))$	(Asymmetry)
$\forall x \forall y \forall z ((R(x,y) \wedge R(y,z)) \to R(x,z))$	(Transitivity)
$\forall x \forall y \forall z ((R(x,y) \wedge R(y,z)) \to \neg R(x,z))$	(Intransitivity)

   Use Fitch proofs to demonstrate that asymmetry is a consequence of transitivity and irreflexivity together.

   Turn your proof in on paper.

3. Do exercises 13.29 and 13.50.

If you have questions or need help, feel free to contact me at gillian_russell@unc.edu

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