PHI 100 : Introduction to Logic and Critical Analysis

Assignment Six

1. Simple Fitch proofs using the existential quantifier rules: do exercises 13.11, 13.12 and 13.14.

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

   Use Fitch proofs to demonstrate that

   a Intransitivity entails irreflexivity.

   b Transitivity and irreflexivity together entail asymmetry.

   You should turn these two proofs in on paper (either hand-written, or printed out from Fitch.)

3. Do exercise 13.50

Congratulations! You're done with the exercises for the course! (Good luck with the final exam: Wednesday December 19th at 1pm in the usual room.) grussell@wustl.edu

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