

Additional Practice Problems: Semantic Assessments
PHIL 422
Woodbridge

Use the techniques we have employed in doing semantic proofs to answer the following questions. [Solutions will be posted soon.]

1. What is the semantic status of “ $(F(a) \wedge \forall x(F(x) \rightarrow G(x))) \wedge \neg G(a)$ ”? (Is it L-true, L-false, or contingent?)
2. What is the semantic status of “ $\neg \forall y(\neg G(y) \vee \neg(\neg H(y) \vee (\neg F(y) \vee G(y))))$ ”? (Is it L-true, L-false, or contingent?)
3. Is the following sequent correct? (That is, do we have entailment or entailment?)
 $\{ \forall x(F(x) \rightarrow G(x)), \forall y(G(y) \rightarrow H(y)), F(a) \} \models (H(a) \vee H(b))$
4. Is the following sequent correct? (That is, do we have entailment or entailment?)
 $\{ \neg \exists x(F(x) \wedge \neg G(x)), \forall y(H(y) \vee \neg G(y)) \} \models \neg \forall z(F(y) \rightarrow H(z))$
5. Is the following set consistent or inconsistent?
 $\{ R(a,b), R(b,a), \forall x \forall y(\neg R(x,y) \rightarrow R(x,x)), \exists x \exists y \neg R(x,y) \}$
6. Is $\neg \forall x \exists y \neg G(x,y) \models \forall x \exists y G(x,y)$? (That is, are the two sentences equivalent or inequivalent?)