PHIL 250
INTRODUCTION TO SYMBOLIC LOGIC

Instructor

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January 26, 2005

COUNTEREXAMPLE EXERCISES

Find counterexamples to the following invalid arguments. For each argument, use your countermodel to provide model-relative 'evaluation proofs' of the premisses, and a model-relative 'evaluation disproof' of the conclusion.

1. $\dfrac{\exists x Fx}{\forall x Fx}$

2. $\dfrac{\forall x Fx}{\forall x \neg Fx}$

3. $\dfrac{\forall x \neg Fx}{\exists x Fx}$

4. $\dfrac{\forall x Fx}{\exists x \neg Fx}$

5. $\dfrac{\exists x \neg \neg Fx}{\forall x Fx}$

6. $\dfrac{\forall x (Fx \vee Gx)}{\forall x Fx}$

7. $\dfrac{\exists x (Fx \wedge Gx)}{\forall x (Fx \vee Gx)}$

8. $\dfrac{\exists x (Fx \vee Gx)}{\exists x Fx \wedge \exists x Gx}$

9. $\dfrac{\exists x Fx \wedge \exists x Gx}{\exists x (Fx \wedge Gx)}$

10. $\dfrac{\forall x Fx}{\forall x (Fx \wedge Gx)}$

11. $\dfrac{\forall x Fx \rightarrow \forall x Gx}{\forall x (Fx \rightarrow Gx)}$

12. $\dfrac{\forall x (Fx \rightarrow Gx)}{\forall x (Gx \rightarrow Fx)}$

13. $\dfrac{\forall y \exists x Lxy}{\exists x \forall y Lxy}$

14. $\dfrac{\forall x Lxx}{\forall x \forall y Lxy}$

15. $\dfrac{\exists x \exists y Lxy}{\exists x Lxx}$

16. $\dfrac{\forall x (Fx \rightarrow Gx)}{\neg \forall x Fx \rightarrow \neg \forall x Gx}$

17. $\dfrac{\exists x Fx \rightarrow \exists x Gx}{\forall x Fx \rightarrow \forall x Gx)}$

18. $\dfrac{\exists x (Fx \wedge \neg Gx)}{\forall x (Fx \rightarrow \neg Gx)}$

19. $\dfrac{\begin{array}{l}\exists x \neg Gx \\ \forall x (Fx \rightarrow Gx)\end{array}}{\neg \exists x Fx}$

20. $\dfrac{\begin{array}{l}\exists x \neg Fx \\ \exists x (Fx \vee Gx)\end{array}}{\exists x \neg Gx}$

21. $\dfrac{\neg \forall x Fx}{\neg \exists x Fx}$

22. $\dfrac{\exists x \neg Fx}{\forall x \neg Fx}$

23. $\dfrac{\neg \forall x Fx}{\forall x \neg Fx}$

24. $\dfrac{\exists x \neg Fx}{\neg \exists x Fx}$