

Philosophy 134
Spring, 2005
Homework 4

Due: May 2, 2005, in class

1. Explain the difference between derivability in KD and derivability in K .
2. Prove that $\diamond\sim\alpha$ is semantically equivalent to $\sim\Box\alpha$.
3. Prove that the following derivability relation holds in KD : $\{\diamond P, P \rightarrow Q\} \vdash_{KD} \diamond Q$
4. Prove that $\{\Box\diamond\alpha\} \not\vdash_{KI} \diamond\Box\alpha$.
5. Suppose there were a derivational system with two kinds of strict scope lines. Informally, one would indicate logical necessity and the other metaphysical necessity. We write ' \Box_L ' to the left of the former kind of strict scope line and ' \Box_M ' to the left of the latter. Devise rules which would allow you to derive ' $\Box_M P$ ' from $\{\Box_L P\}$ but *not* to derive ' $\Box_L P$ ' from $\{\Box_M P\}$.