

# Philosophy 142: Non-Normal Modal Logic Exercises

October 27, 2008

**1.** Show  $\vdash_N A \rightarrow A$ .

**2.** Show  $\vdash_N \neg\Diamond(\Box p \wedge \Diamond\neg p)$  but  $\not\vdash_L \neg\Diamond(\Box p \wedge \Diamond\neg p)$ .

**3.** Show the following for  $N$ . Specify a counter-model and draw a picture of it.

(a)  $\not\vdash \Box p \supset p$

(b)  $\not\vdash \Box p \supset \Box\Box p$

(c)  $\not\vdash \Box(p \rightarrow p)$

Which of the above hold in  $N_\rho$  or  $N_{\rho\tau}$ ?

**4.** Find a formula  $\phi$  such that  $\vdash_N \phi$  but  $\not\vdash_E \phi$ .