

# Philosophy 142: Classical Logic Exercises

September 15, 2008

**1.** Let  $\nu$  be an interpretation such that  $\nu(p) = 0$ ,  $\nu(q) = 1$  and  $\nu(r) = 1$ . What are the truth values of the following formulae:

- (a)  $p \supset p$
- (b)  $(p \supset q) \wedge (q \supset r)$
- (c)  $\neg((p \vee r) \supset q)$
- (d)  $\neg(((p \supset q) \wedge (p \supset r)) \supset (p \supset (q \wedge r)))$

**2.** Check the truth of each of the following using tableaux. If the inference is invalid, read off a counter-model from the tree and check directly that it makes the premises true and the conclusion false.

- (a)  $\vdash p \supset p$
- (b)  $p \supset q \vdash q \supset p$
- (c)  $p \supset q, q \supset r \vdash p \supset r$
- (d)  $\neg(p \supset q) \wedge \neg(p \supset r) \vdash \neg q \vee \neg r$