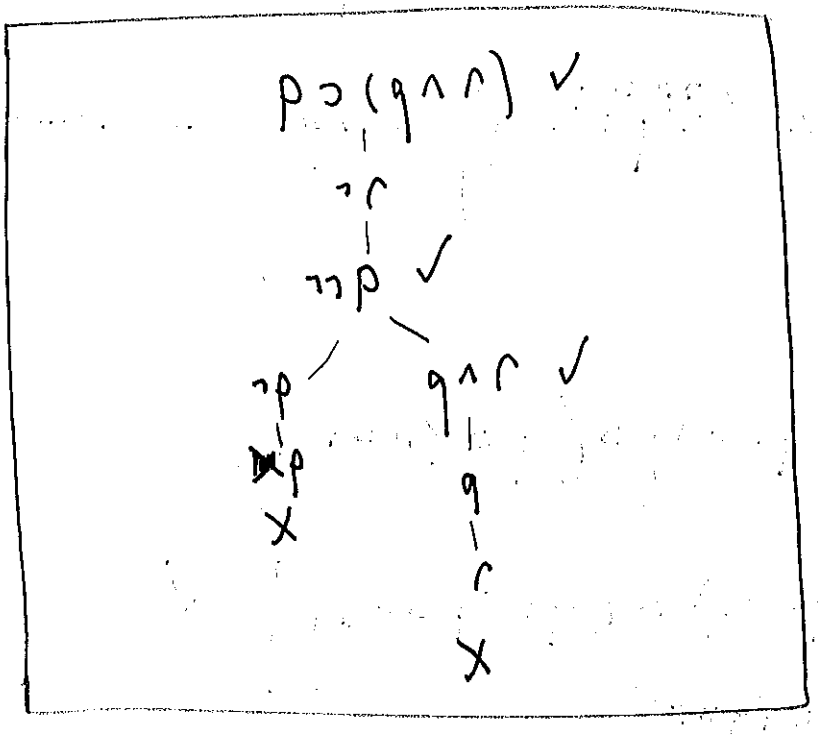
Solutions to Assignment 1

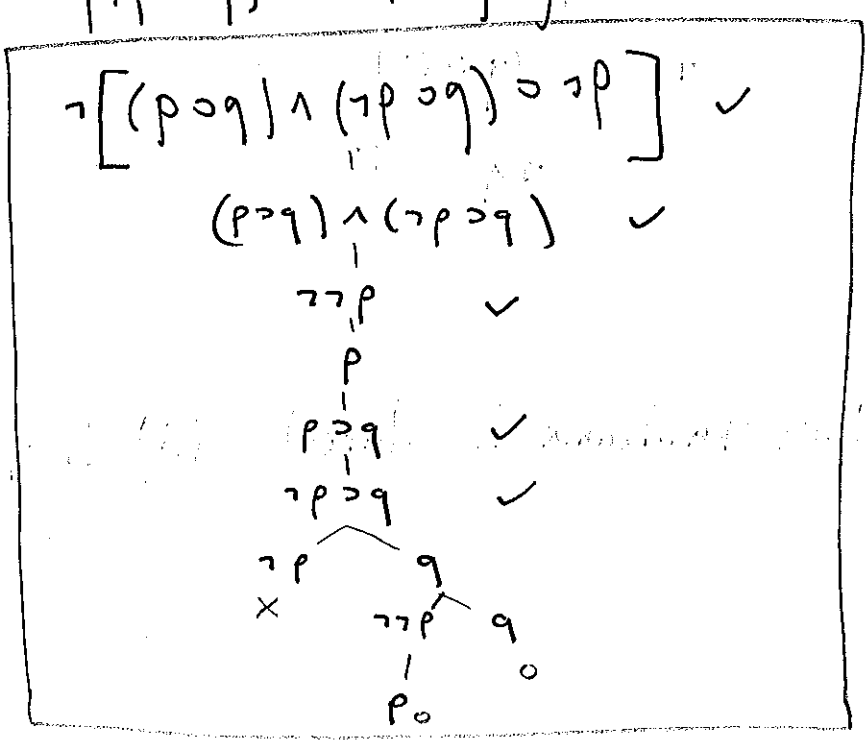
Q3 Evaluate $(3)\ p \supset (q \wedge r),\ r \vdash \neg p$



Since the tableaux is closed, (3) is true.

Q4 Evaluate

(4) $\vdash \neg\left[\left(p \supset q\right) \wedge \left(\neg p \supset q\right) \supset q\right]$



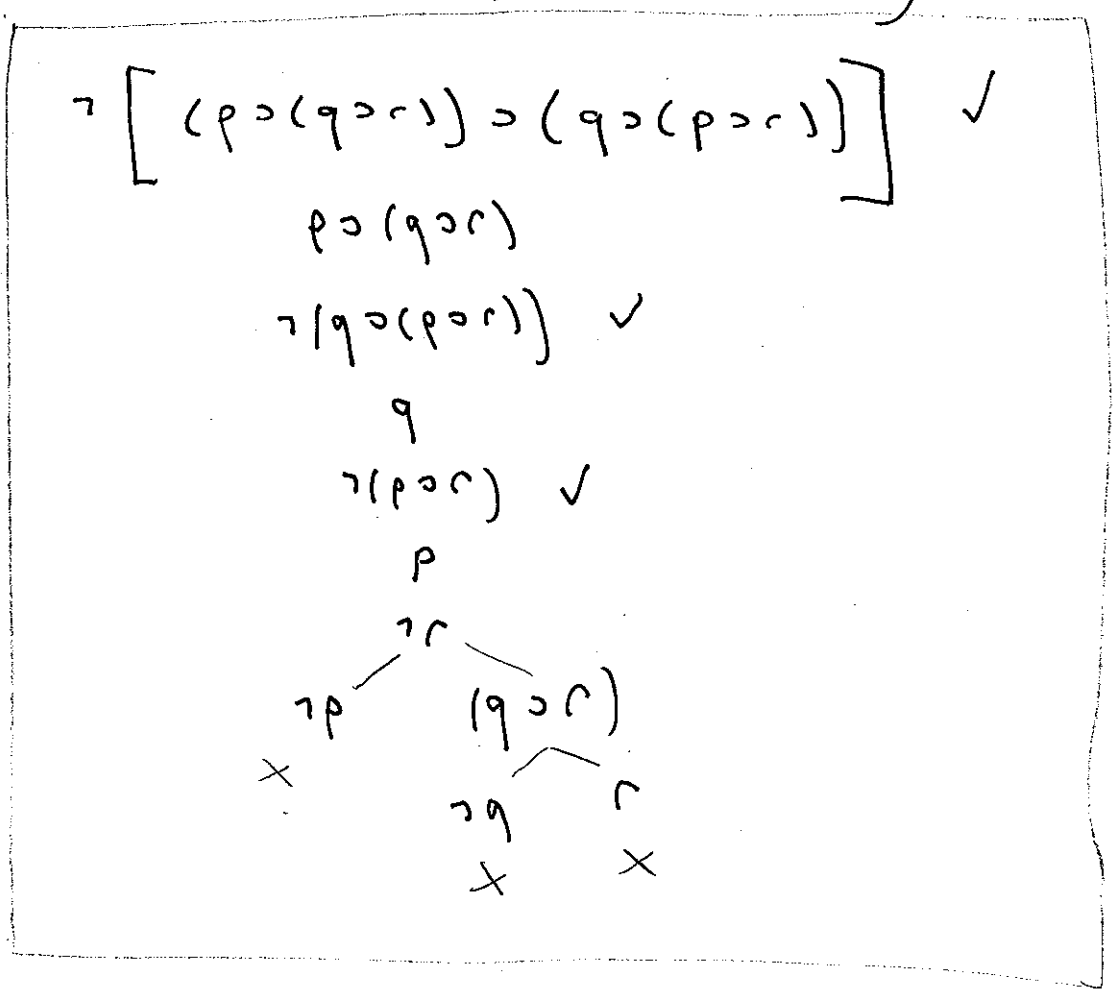
Since the above Tableaux is open, (4) is false

Countermodel : let v be a (CSL)-interpretation that maps p to 1 and q to 1.

Then $\left((p \dot{\supset} q) \wedge (\neg p \dot{\supset} q)\right) \supset \neg p$ is false under v

Q5 Evaluate

(5) $\vdash (p \supset (q \supset r)) \supset (q \supset (p \supset r))$



Since the above tableaux is closed, (5) is true.

Q1 Suppose Σ is a set of formulas in S^t, and A is a formula in S^t. Then:

A is a logical consequence of the members of Σ

iff

A is a CSL-semantic consequence of the members of Σ

iff

A is a CSL-proof theoretic consequence of the members of Σ

Q2a. $p_2 \wedge (p_1 \supset p_0)$ under m means that

$2+2=4$ and (either it is not the case that Hong Kong is in Asia, or Obama is a bachelor)

$p_2 \wedge (p_1 \supset p_0)$ is false under m

Q2b # $p_2 \wedge (p_1 \supset p_0)$ is false under v