

PHI 120: SYMBOLIC LOGIC
HOMEWORK ASSIGNMENT

Due: Thursday, October 23, at the beginning of lecture

Topic: Reverse Truth-Tables (*Reductio* Procedure)

Note: Make sure that every truth-value (T or F) is assigned a unique numerical value. Do not assign the same numerical value to two or more truth-values. Make sure that your T's and F's are capitalized, separated from each other, and legible.

A. Determine by means of a reverse truth-table (similar to the *reductio* procedure described in K&M, pp. 92-95) whether the following symbolic sentences are *tautologies*:

$$(1) \quad \sim [\sim (P \vee (Q \wedge R)) \wedge \sim (Q \rightarrow (P \leftrightarrow R))]$$

$$(2) \quad (\sim R \leftrightarrow S) \wedge \sim (P \vee \sim Q) \rightarrow \sim (S \rightarrow \sim P) \vee (R \wedge Q)$$

B. Determine by means of a reverse truth-table (similar to the *reductio* procedure described in K&M, pp. 100-101) whether the following symbolic arguments are *valid*:

$$(3) \quad (\sim P \wedge Q) \vee (R \wedge \sim S) . \sim Q \rightarrow (\sim S \rightarrow R \wedge P) \therefore Q$$

$$(4) \quad P \vee (\sim R \wedge \sim T) . \sim T \leftrightarrow Q \therefore \sim P \rightarrow Q \wedge \sim R$$