MAT 17: Introduction to Mathematics
Truth Tables for Compound Logical Statements and Propositions

Directions: **Complete a truth table for each exercise. Identify any tautologies and equivalent basic statements (i.e., NOT, AND, OR, IF-THEN, IFF, etc.) where appropriate.**

1. $(p \wedge q) \vee \sim p$

p	q	$p \wedge q$	$\sim p$	$(p \wedge q) \vee \sim p$
T	T			
T	F			
F	T			
F	F			

2. $\sim q \rightarrow (\sim p \vee q)$

p	q	$\sim q$	$\sim p$	$\sim p \vee q$	$\sim q \rightarrow (\sim p \vee q)$

3. $(\sim p \rightarrow q) \vee (\sim p \wedge \sim q)$

p	q					

4. $[\, p \wedge (q \vee \sim r) \,] \rightarrow (\sim p \wedge q)$

5. $[\,(\sim q \wedge p) \rightarrow r\,] \leftrightarrow [\,(\sim r \rightarrow \sim q) \vee p\,]$

6. $\{ r \wedge [(\sim s \vee q) \leftrightarrow \sim p] \} \rightarrow [\sim(\sim q \leftrightarrow r) \rightarrow (s \wedge \sim r)]$

p	q	r	s												$\{ r \wedge [(\sim s \vee q) \leftrightarrow \sim p] \} \rightarrow [\sim(\sim q \leftrightarrow r) \rightarrow (s \wedge \sim r)]$