Mrs. Glosser's Math Goodies

Symbolic Logic Worksheet 3 Name _____

1. Complete the truth table below using your knowledge of symbolic logic.

p	q	~q	$p \wedge q$	$p \vee q$	$p \rightarrow q$	$q \rightarrow p$	$p \leftrightarrow q$	$p \rightarrow \sim q$	$p \vee q \rightarrow p$	$p \wedge q \rightarrow q$
T	T									
T	F									
F	T									
F	F									

Answer questions 2 through 9 based on the truth table above.

2. Which statement is negation? _____

3. Which statements are conditionals? _____

4. Which statement is a disjunction? _____

5. Which statement is a biconditional? _____

6. Which statement is a conjunction? _____

7. Which statements are logically equivalent? _____

8. Which statement is a tautology? _____

9. Determine which of the following statements are tautologies by constructing a truth table. Write yes or no in the space provided.

   a) $r \vee \sim r$ _____

   b) $r \rightarrow \sim r$ _____

   c) $(x \vee y) \rightarrow (x \wedge y)$ _____

   d) $\sim(p \vee q) \leftrightarrow (\sim p \wedge \sim q)$ _____