

CSC 8-151 Discrete Mathematics for Computer Science

Quiz 1 April 13, 2016

Solution

name

1. (3 pts.) Give the truth table for the following expression: $p \wedge (p \vee \neg q)$

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

2. (4 pts.) Use a truth table to decide if $p \rightarrow q$ is logically equivalent to $\neg p \vee q$.

p	q	$p \rightarrow q$	\leftrightarrow	$\neg p \vee q$
T	T	T	T	F
T	F	F	T	F
F	T	T	T	T
F	F	T	T	T

\leftrightarrow is a tautology
so
 $p \rightarrow q \equiv \neg p \vee q$

3. (2 pts.) Consider the statement: If you study every day you will pass the course.
a. Give the converse of this statement.

If you pass the course, you study every day.

- b. Give the contrapositive of this statement.

If you didn't pass the course, you didn't study every day.

4. (3 pts) Draw a circuit for the boolean expression: $r \wedge (p \vee \neg q)$

