Quiz 1

1/30/15

Solutions

Name: _____

1) Verify the logical equivalence:

$$\sim(p \vee q) \equiv (\sim p) \wedge (\sim q)$$

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

Why are they equivalent?

$\sim(p \vee q)$ and $(\sim p) \wedge (\sim q)$ are equivalent because the truth values in the circled columns match. This is also one of DeMorgan's Laws.

Mixing up the symbols $\vee$ (OR) and $\wedge$ (AND) but filling in truth values correctly (with respect to the mix up) } −2 pts

Insufficient explanation for why the equivalence holds. } −1 pt

Mostly incorrect truth table } -3-8 pts