

Quiz, Week 12

For this quiz, you may want to use these truth tables, for “not,” “or,” “and,” and “implies.”

P	$\sim P$	P	Q	$P \vee Q$	P	Q	$P \wedge Q$	P	Q	$P \Rightarrow Q$
T	F	T	T	T	T	T	T	T	T	T
T	F	T	F	T	T	F	F	T	F	F
F	T	F	T	T	F	T	F	F	T	T
F	T	F	F	F	F	F	F	F	F	T

1. Fill in the truth table below to show that $\sim(\sim P) = P$.

P	$\sim P$	$\sim(\sim P)$
T	F	T
F	T	F

2. Fill in the truth table below to show that

$$\sim(P \wedge Q) = \sim P \vee \sim Q.$$

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

3. Fill in the truth table below to show that

$$P = \sim P \Rightarrow (Q \wedge \sim Q).$$

P	Q	$\sim P$	$\sim Q$	$Q \wedge \sim Q$	$\sim P \Rightarrow (Q \wedge \sim Q)$
T	T	F	F	F	T
T	F	F	T	F	T
F	T	T	F	F	F
F	F	T	T	F	F