

Math 2283 - Introduction to Logic

Quiz #7 - 2006.09.29

Solutions

Show that the following pairs of Sentential wffs are equivalent.

1. $(P \Rightarrow Q)$ and $(\neg Q \Rightarrow \neg P)$

P	Q	$P \Rightarrow Q$	P	Q	$(\neg Q \Rightarrow \neg P)$
T	T	T	T	T	F
T	F	F	T	F	F
F	T	T	F	T	T
F	F	F	F	F	T

2. $((P \Rightarrow Q) \wedge (P \Rightarrow \neg Q))$ and $\neg P$

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

3. $(P \Leftrightarrow Q)$ and $((\neg P \wedge \neg Q) \vee (P \vee Q))$

P	Q	$(P \Leftrightarrow Q)$	P	Q	$((\neg P \wedge \neg Q) \vee (P \vee Q))$
T	T	T	T	T	F
T	F	F	T	F	F
F	T	F	F	T	F
F	F	T	F	F	T

These two are not equivalent!