

Math 1303 - Math in the Liberal Arts

Quiz #1 - 2005.08.24

Solutions

1. Define

p : I cook dinner.

q : You do the dishes.

Write the following sentences in symbolic form.

a) If I cook dinner, then you do the dishes.

$$p \rightarrow q$$

b) I will cook dinner and you will do the dishes, or I will not cook dinner.

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

c) You will do the dishes, or I will not cook dinner and you will not do the dishes.

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

2. Construct a truth table for the statement $p \wedge q \rightarrow \sim p \vee q$.

To ensure that the order of operations is done correctly, we can rewrite as follows:

$$p \wedge q \rightarrow \sim p \vee q = (p \wedge q) \rightarrow (\sim p \vee q).$$

p	q	$p \wedge q$	$\sim p$	$\sim p \vee q$	$(p \wedge q) \rightarrow \sim p \vee q$
T	T	T	F	T	T
T	F	F	F	F	T
F	T	F	T	T	T
F	F	F	T	T	T