

# Math 2283 - Introduction to Logic

Quiz #2 - 2008.09.10

Solutions

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1. Formulate the following expressions in logical symbolism:

a) If  $p$  and  $q$  then  $p$  or  $q$ .

$$p \wedge q \rightarrow p \vee q$$

b) If  $p$  and  $q$  then  $p$ , or  $q$ .

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

c) If  $p$  and  $q$ , then  $p$  or  $q$ .

This is the same as a), but we will put in the parenthesis to reflect the comma in the above sentence.

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

2. Construct truth tables for your answers to problems 1 b) and 1 c).

First we do 1 b):

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

Next, 1 c):

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