

# Math 1303 - Math in the Liberal Arts

## Quiz #3 - 2005.09.02

### Solutions

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1. Write the following argument in symbolic form:

If the moon is made of green cheese, then pigs can fly or circles are round. Pigs cannot fly. Therefore the moon is not made of green cheese.

Define the following statements:

p: The moon is made of cheese.

q: Pigs can fly.

r: Circles are round.

Then one has the following argument:

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

$$\sim q$$

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$$\therefore \sim p$$

2. Determine whether or not the argument in problem 1 valid.

First we must write this as one statement:

$$[(p \rightarrow (q \vee r)) \wedge (\sim q)] \rightarrow \sim p$$

Next we compute the truth table for the above statement:

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

Since the last column is not all true, then the argument is invalid.