

# Math 112 - Quiz 6

October 6, 2016

Name key

Score \_\_\_\_\_

Show all work to receive full credit. Supply explanations when necessary. This quiz is worth 10 points.

Consider the following argument:

**Premise 1:**  $\overbrace{\text{If it is sunny, I will wear}}^p \text{ sun block.}^q$

**Premise 2:** It is not sunny.

**Conclusion:** I will not wear sun block.

1. Write the argument in symbolic form.

$$\begin{array}{r}
 p \rightarrow q \\
 \sim p \\
 \hline
 \therefore \sim q
 \end{array}$$

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

2. Use the truth table method to determine whether the argument is valid or not.

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

} Not a Tautology!  
Not Valid!

3. The form of the argument above is very common. Use your knowledge of common arguments to explain the validity of the argument.

FALLACY OF THE INVERSE:

$$\sim p \rightarrow \sim q \text{ IS THE INVERSE OF } p \rightarrow q$$

THE ARGUMENT IS NOT VALID BECAUSE  
 THE INVERSE IS NOT EQUIVALENT TO  
 THE ORIGINAL.