Math 112 - Quiz 7

March 28, 2018

Name __key__

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (5 points) Consider the following conditional statement:

   $$\overset{p}{} \qquad \overset{q}{}$$

   If Jon skips school, then Jon eats pizza.

   (a) State the inverse. $\quad \sim p \rightarrow \sim q$

   IF JON DOES NOT SKIP SCHOOL, THEN JON DOES NOT EAT PIZZA.

   (b) State the contrapositive. $\quad \sim q \rightarrow \sim p$

   IF JON DOES NOT EAT PIZZA, THEN JON DOES NOT SKIP SCHOOL.

   (c) State the converse. $\quad q \rightarrow p$

   IF JON EATS PIZZA, THEN JON SKIPS SCHOOL.

   (d) Which statement is logically equivalent to the original statement?
   Circle your choice.

   Inverse   (Contrapositive)   Converse

   (e) Which statement is logically equivalent to the converse?
   Circle your choice.

   (Inverse)   Contrapositive   Original

Over $\longrightarrow$

2. (5 points) Consider the following argument.

$$\overbrace{\text{If it is Wednesday}}^{p}\text{, then }\overbrace{\text{Sue will eat at } Good\ Burger}^{q}.$$

It is not Wednesday.

Therefore, Sue.will not eat at *Good Burger*.

(a) Write the argument in symbolic form.

$$p \rightarrow q$$

$$\underline{\sim p}$$

$$\therefore \sim q$$

(b) Use the truth table method to determine the validity of the argument.

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

p	q	p → q	~p	(p→q) ∧ ~p	~q	WHOLE STATEMENT [ ] → ~q
T	T	T	F	F	F	T
T	F	F	F	F	T	T
F	T	T	T	T	F	F
F	F	T	T	T	T	T

NOT A TAUTOLOGY.

ARGUMENT IS NOT VALID.