Math 112 - Quiz 5

February 28, 2019

Name key

Score _____

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

1. (2 points) Let p be the statement "Sophie has been arrested" and let q be the statement "Bubba has not been arrested." Write each statement in symbolic form.

   (a) If Sophie has not been arrested, then Bubba has not been arrested.

   $\sim p \rightarrow q$

   (b) Neither Sophie nor Bubba has been arrested.

   $\sim p \wedge q$

2. (2 points) Construct the truth table for $\sim p \vee q$.

p	q	$\sim p$	$\sim p \vee q$
T	T	F	T
T	F	F	F
F	T	T	T
F	F	T	T

3. (1 point) Suppose p and r are false statements, and q is a true statement. What is the truth value of $q \vee (p \wedge \sim r)$?

$T \vee (F \wedge \sim F)$

$T \vee F$

$\boxed{T}$

TAKE-HOME PORTION OF QUIZ 5. DUE TUESDAY.

4. (3 points) Construct the truth table for $(p \vee q) \longrightarrow (\sim p)$.

p	q	$p \vee q$	$\sim p$	$(p \vee q) \longrightarrow \sim p$
T	T	T	F	F
T	F	T	F	F
F	T	T	T	T
F	F	F	T	T

5. (1 point) Without actually constructing it, determine how many rows and columns the truth table for $(p \vee q) \wedge (r \wedge s)$ would have.

4 STATEMENTS + 3 OPS $\Rightarrow$ 7 COLUMNS

4 STATEMENTS $\Longrightarrow$ 16 ROWS

6. (1 point) Suppose p is false and q is true. What is the truth value of $p \longrightarrow (q \vee \sim p)$?

$F \rightarrow (T \vee \sim F)$

$F \rightarrow (T \vee T)$

$F \rightarrow T$

$\boxed{T}$