

**Math 112 - Quiz 6**

March 7, 2019

Name key

Score \_\_\_\_\_

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

1. (4 points) Let  $p$  be the statement "The school mascot is a gopher" and let  $q$  be the statement "The school is in Ohio."

(a) Write in symbolic form: "If the school is not in Ohio, then its mascot is a gopher."

$$\sim q \rightarrow p$$

- (b) Suppose  $p$  is true and  $q$  is false. What is the truth value of the statement in part (a)? (Show how you got your answer.)

$$\sim q \rightarrow p \Rightarrow \sim F \rightarrow T \Rightarrow T \rightarrow T \text{ is } \boxed{T}$$

2. (2 points) Suppose  $p$  and  $r$  are true statements, and  $q$  is a false statement. What is the truth value of  $q \vee (\sim p \rightarrow r)$ ? (Show your work.)

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

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

$$F \vee T$$

$$F \vee T \text{ is } \boxed{\text{True}}$$

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

$p$	$q$	$\sim q$	$\sim p$	$\sim q \rightarrow \sim p$
T	T	F	F	T
T	F	T	F	F
F	T	F	T	T
F	F	T	T	T