

**Math 112 - Quiz 4**

March 6, 2019

Name key

Score \_\_\_\_\_

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

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1. (2 points) Suppose  $p$  and  $r$  are false statements, and  $q$  is a true statement. What is the truth value of  $q \vee (p \wedge \sim r)$ ? (Show your work.)

$$T \vee (F \wedge \sim F) = T \vee F = \boxed{T}$$

2. (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

3. (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 true. What is the truth value of the statement in part (a)?

$$\sim T \rightarrow T = F \rightarrow T = \boxed{T}$$