

## Math 301

### Quiz 1

Justify all answers with neat and organized work. Clearly indicate your answers. 20 points possible.

1. (4 pts.) Write the truth table for this statement form.

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

2. (4 pts.) Use a truth table to determine whether the argument form is valid or invalid. Clearly label the “critical rows.”

$$\begin{array}{l} p \vee \sim q \\ p \rightarrow \sim q \\ \therefore \sim q \end{array}$$

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On this page, read the instructions and write your answers carefully. Missing a “little” word like “and,” “or,” “not,” or “if” could result in no credit for that problem. If a negation is called for (example: negate “blah blah”), then don’t simply write a trivial negation (like “it is not the case that blah blah”).

3. (2 pts.) Write the *negation* for this statement.

My keyboard is defective and my printer is a laser printer.

4. (2 pts.) Write this statement in a *logically equivalent* if–then form.

Having an informative table of contents is a necessary condition for this textbook to be available promptly.

5. (2 pts.) Write the *negation* of this statement.

If the triangle is a famous example, then Boggs is an English major.

6. (2 pts.) Use modus ponens or modus tollens to fill in the blank in the following argument so as to produce a valid inference.

If nine minutes are missing, then magnetic interference is present.

Magnetic interference is not present.

$\therefore$  \_\_\_\_\_

7. (2 pts.) Write the *negation* of this statement.

All llamas are domesticated.

8. (2 pts.) Write the *negation* of this statement.

No graphs are bipartite.