

NAME _____

DATE _____

MATH 162 ONLINE UNIT 2 TEST

Fall Term 1

Part 1

Write a negation for each statement.

1. $6 - 3 = 3$

2. All men are created equal.

3. Some members of the class went on the field trip.

4. If that's the way you feel, then I will accept it.

5. She applied and got a student loan.

Let p represent "You will love me" and let q represent "I will love you." Write each statement in symbols.

6. If you won't love me, then I will love you.

7. I will love you if you will love me.

8. I won't love you if and only if you won't love me.

Using the same statements as for Exercises 6-8, write each of the following in words.

9. $p \wedge q$

10. $(p \vee q)$

In each of the following, assume that p is true and that q and r are false. Find the truth value of each statement.

11. $q \wedge \neg r$

12. $r \vee (p \wedge q)$

13. $r \vee (s \vee r)$ (The truth value of the statement s is unknown.)

14. $\neg(p \wedge q)$

15. Explain in your own words why, if p is a statement, the biconditional $p \leftrightarrow p$ must be false.

16. State the necessary conditions for each of the following.

(a) a conditional statement to be false

(b) a conjunction to be true

(c) a disjunction to be false

Construct a truth table for each of the following.

17. $p \wedge (p \vee q)$

18. $(p \wedge q) \wedge (p \vee q)$

Part 2

Decide whether each Statement is true or false.

19. Same negative integers are whole numbers.

20. All irrational numbers are real numbers.

Write each conditional statement in if ... then form.

21. All integers are rational numbers.

22. Being a rhombus is sufficient for a polygon to be a quadrilateral.

23. Being divisible by 2 is necessary for a number to be divisible by 4.

24. She digs dinosaur bones only if she is a paleontologist.

For each statement, write (a) the converse, (b) the inverse, and (c) the contrapositive.

25. If a picture paints a thousand words, the graph will help me understand it.

26. $\neg(p \wedge \neg r)$ (Use one of De Morgan's laws as necessary.)