

Math 234 Preview Exercises

Section 3.2

NAME _____

Read Section 3.2 in the textbook and answer the following questions. *Hand in this worksheet at the next class.*

1. What statement is logically equivalent to the negation of the following statement?

$$\forall x \text{ in } D, Q(x).$$

2. What statement is logically equivalent to the negation of the following statement?

$$\exists x \text{ in } D \text{ such that } Q(x).$$

3. What statement is logically equivalent to the negation of the following statement?

$$\forall x \text{ if } P(x) \text{ then } Q(x).$$

4. Write the negation of the following statement:

All primes are odd.

5. What does it mean that the statement " $\forall x \text{ in } D, \text{ if } P(x) \text{ then } Q(x)$ " is *vacuously true*?

6. Write the converse of the following statement:

$$\forall x \in D, \text{ if } P(x) \text{ then } Q(x).$$