

Math 301

Quiz 1

Show all work in a neat and organized fashion. Clearly indicate your answers.
10 points possible.

1. (2 pts.) Define the term *prime*. (Use the definition given in the textbook.)

2. (2 pts.) Define the term *divisible*. (Use the definition given in the textbook.)

3. (2 pts.) Let the set of *natural numbers* be the set of nonnegative integers; i.e., $\mathbb{N} = \{0, 1, 2, 3, \dots\}$. Use the concept of natural numbers to define the relation *greater than or equal to* (\geq) on the set of integers.

A correct answer begins: “Let x and y be integers. We say that x is *greater than or equal to* y , and we write $x \geq y$, provided”

For this problem, you may freely use the operations $(+, -, \times)$ on integers, but you must assume that the order relations $(<, \leq, >, \geq)$ are not yet defined on either natural numbers or integers.

4. (4 pts.) Suppose that x , y , and z are integers. Prove that if $x \mid y$ and $x \mid z$, then $x \mid (y + z)$.

Bonus. (1 optional bonus point possible) What are the two plurals of the word *lemma*?