

Name: \_\_\_\_\_

Quiz #1

Math 220

September 11, 2003

1. [4 points] Identify each of the following as a **statement**, an **open sentence**, or **neither**.

(a) The number  $n$  is divisible by 2.

(b) Every prime number bigger than 2 is odd.

(c) The negation of a false statement is true.

(d) The area of a circle is  $\pi r^2$ .

2. [2 points] Translate the statement

“2 has a real square root”

into mathematical symbols by filling in the blanks:

$\exists$  \_\_\_\_\_ [ \_\_\_\_\_ = 2].

3. [4 points] For each statement below, indicate (without proof) whether it is **True** or **False**.

(a)  $\forall m \in \mathbb{Z}, \forall n \in \mathbb{Z}$ , if  $m$  and  $n$  are both even, then  $mn$  is divisible by 4.

(b)  $\exists n \in \mathbb{Z}$  so that  $\forall m \in \mathbb{Z}$ ,  $m$  is divisible by  $n$ .