EECS20n, Quiz 1, 1/30/04

The quiz will take 10 minutes. Write your reponse on the sheet.

Please print your name and lab time here:

Last Name _____ First _____ Lab time _____

Indicate whether the following statements are **true** or **false**. There will be no partial credit, so please consider your answer carefully. Put a box around your answer.

1. The sets $\{0, 1, 2, \cdots\}$ and $\{1, 2, 3, \cdots\}$ have the same cardinality.

2. The sets $\{0, 1, 2, \cdots\}$ and $[0, 1]$ have the same cardinality.

3. $\exists y \in$ *Reals* $\forall x \in$ *Reals* $\ y < x$.

4. $\forall x \in$ *Reals* $\exists y \in$ *Reals* $\ y < x$.

5. Consider the function x where $\forall\ t \in$ *Reals*, $x(t) = 2$. Then $x \in [$*Reals* $\rightarrow$ *Reals*$]$.

6. Let f: *Reals* $\rightarrow$ *Reals* and g: *Reals* $\rightarrow$ *Reals*. Define the functions $f + g$ by $\forall x \in$ *Reals*, $(f + g)(x) = f(x) + g(x)$, and $g \circ f$ by $\forall x \in$ *Reals*, $(g \circ f)(x) = f(g(x))$. Then

$$\begin{aligned} f + g &= g + f \\ f \circ g &= g \circ f \end{aligned}$$

7. There is a function $f: \{1, 2\} \rightarrow \{a, b\}$ with *graph*$(f) = \{(1, a), (2, a)\}$.

8. Let $f: X \rightarrow Y$. Then *graph*$(f) \subset X \times Y$.

9. Let $G \subset X \times Y$. There exists a function f such that *graph*$(f) = G$.