CS 486
Spring 1999
Quiz 7

March 16, 1999

Circle the correct answer.

1. Which of these specifies in first-order logic that $R(x, y, z)$ represents a *function* of x, y with value z?
   (a) $\forall x \forall y \exists z\ R(x, y, z)$
   (b) $\forall x \forall y \forall z\ R(x, y, z)$
   (c) $\forall x \forall y \forall z_1 \forall z_2\ (R(x, y, z_1)\ \&\ R(x, y, z_2) \supset z_1 = z_2)$
   (d) none of the above

2. Which of these is NOT a property of equality
   (a) $(\forall x)(\forall y)(E(x, y) \supset E(y, x))$
   (b) $(\forall x)\ E(x, x)$
   (c) $(\forall x)(\exists y) \sim E(x, y)$

3. Lowenheim's theorem says
   (a) Every formula X has a countable model
   (b) If X is false then it is false in a finite model
   (c) If X is provable then it is satisfiable using a countable model
   (d) none of the above

4. The Skolem-Lowenheim theorem says that if every finite subset of a set S of first-order formulas is satisfiable, then S is simultaneously satisfiable in a denumerable domain. True False