Name: _____

Math 160A - Winter 2002 - Quiz #4
Instructor: Sam Buss - UCSD - March 1, 2002

Express each of the English sentences as a first-order formula. If the sentence is ambiguous, use your best judgement on what it means, and explain what is ambiguous and how you resolved the ambiguity. You may use our conventions on abbreviating formulas. The universe of objects is a population of people (workers). Every person has exactly one boss.

    The first order language has the following symbols: H and L are predicate symbols, and b is a unary function symbol. Equality ($=$) is also in the language. Their meanings are:

$H(x)$ - "x is honest"

$L(x, y)$ "x likes y"

$b(x)$ - "the person who is x's boss"

1. Some honest people do not like themselves.

2. No dishonest person likes himself.

3. No honest person is disliked by everyone.

4. No one likes their boss.

5. There are two people who have the same boss.

6. There is an honest person who is the boss of everyone.

7. Every honest person is the boss of someone.

8. Anyone who is their own boss likes himself.

9. No one is liked by the boss of their boss.

9. There is a person who dislikes his boss, but likes everyone else.