Spring, 1992 Name: _____

CS 342 — Principles of Programming Languages

Prolog Test (Terms, Version 2)

The usual instructions apply.

Don't feel obligated to fill up all the space on the page. Conversely, don't feel limited by the space on the page, since you can use the back if you explicitly tell us on the front when you do so.

1 Terms

1. (8 points) What is a unifier of two terms, say t and u? How is a unifier important in Prolog?

2. (10 points) Describe the procedural interpretation of a Prolog program.

3. (10 points) Give all the output printed by the query and the tracing prints in the following Prolog program. If the program goes into an infinite loop show the two identical states, and write "infinite loop".

```
(infer (simplify (diff X X) nil)
  from (print base)
       (print x = X))
(infer (simplify (diff (cons X Y) Z) (cons X W))
  from (print entering)
       (print x = X y = Y z = Z w = W)
       (simplify (diff Y Z) W)
       (print exiting)
       (print x = X y = Y z = Z w = W))
(infer? (simplify DL (cons 1 (cons 2 nil))) (print answer: DL))
```