

Name of the Student: \_\_\_\_\_

Try to solve as many of the problems below as you can; make sure you attempt all.

**Q 1**

Solve exercises 8.6, 8.9, 8.17, 8.24, 8.26, 8.27 from Touretzky (1991).

**Q 2**

Write a recursive function MULTI-MEMBER that checks if its first argument occurs more than once in the second.

**Q 3**

Write a recursive function REM-LAST, which removes the last occurrence of its first argument from the second.

**Q 4**

Write a recursive function SUBSTITUTE, with 3 arguments, say old new exp such that every occurrence of old at the top-level of exp is replaced by new. By “top-level” we mean the function should not check embedded levels in lists. E.g. (substitute 'x 'k '(x (x y) z)) should return (k (x y) z).

**Q 5**

Modify SUBSTITUTE to D-SUBS (for “deep substitute”), so that it does the replacement for *all* occurrences of old, no matter how deeply embedded.