Homework, Week 0, part C

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Invoke clisp and type the following commands. Remember, a ':q' (COLON QUE), ':a' (COLON AIGH), CONTROL-BREAK, or CONTROL-C will restore the top level prompt if you make a mistake. This explores the Lisp functions, `(minusp)`, `(zerop)`, `(plusp)`, `(evenp)`, `(oddp)`, `(rem)`, `(mod)`, `(random)`, and `(ash)`. Write down each result and see if you can figure out what each one does.

Functions that end in the letter "p" are called *predicates*. Predicates return either TRUE or FALSE. This homework also includes the remainder (or modulus) operations. `(random)` is a random number generator, useful for games of chance. `(ash)` is the arithmetic shift function. It takes two arguments, the number to be shifted, and a number indicating the amount to shift – to the left for a positive amount, and to the right for a negative number – effectively doubling or halving the number given as the first argument.

```
(minusp -1)
(minusp 0)
(minusp 1)
(zerop -1)
(zerop 0)
(zerop 1)
(plusp -1)
(plusp 0)
(plusp 1)

(evenp 4)
(evenp 5)
(oddp 6)
(oddp 7)

;; run with (rem) and (mod)
(rem 4 9)
(rem 5 9)
(rem 6 9)
(rem 7 9)
(rem 8 9)
(rem 0 9)
(rem 9 4)
(rem 9 5)
(rem 9 6)
(rem 9 7)
(rem 9 8)
(rem 9 9)
(rem 9 4)

;; run these several times
;What is the difference?
(random 1.0)
(random 1)
(random 11)
(random 11.0)
(random 101)
(random 101.0)

(ash 4 0)
(ash 4 1)
(ash 4 2)
(ash 4 3)
(ash 4 4)
(ash 28 0)
(ash 28 -1)
(ash 28 -2)
(ash 28 -3)
(ash 28 -4)
```