

Homework, Week 0, part D

September 12, 2014

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 five Lisp functions, + (addition), - (subtraction), * (multiplication), and / (division), and (expt) which is short for ‘exponent’. Write down each result and see if you can figure out what each one does.

```
;;type these in clisp  
;;then, do them by hand  
(+ (* 3 5) (* 4 2))  
(/ (+ 4 3) (* 6 2))  
(/ (* (- 7 3) (+ 2 2)) 3)  
(* (+ 5 4) (* 2 4) (- 13 7) (/ 36 12))  
(/ (+ (* 6 4) (* 3 4)) (- (* 9 11) (* 8 7)))
```

```
;;do these by hand  
;;then, type them in clisp
```

$(5 + 8) \times (18 - 10)$

$(5 + 4) \times (3 - 2) \div (99 + 99)$

$\frac{(4 \times 3) + (10 + 2)}{(20 - 13) + (2 + 2)}$

$\frac{(4 \times 3) + (10 + 2) - (+55)}{(20 - 13) + (2 + 2) \times -1}$

$\frac{1}{(4 + 3) \times (10 - 3)}$

HINT: (expt 4 -1) is the same thing as dividing 1 by 4. In other words, (expt (- 7 3) -1) is the same thing as $\frac{1}{7-3}$ or $1 \div (7 - 3)$.

Exit from clisp with (QUIT).