CS 505
Autumn 1997
Assignment 3 — Haskell
Due Oct 29

1. Write a Haskell function `average` that computes the average of a list of numbers. It is an error to give this function an empty list.

2. Make up, write, and test your own Haskell program that uses infinite data structures in an interesting way. (If you can't think of anything interesting, make up a program that uses them in an uninteresting way. Some samples (in Miranda) from 1994 are on the web for that offering of 505.)

   If you have an example that you like, please be prepared to demo it in class on October 27. I'd like students to show some interesting examples they have done. Don't be shy!

3. Write and test an interactive Haskell program that prompts the user for pairs of polynomials in x and prints the results. The two polynomials should be entered as strings. For example (Haskell's output is in italics):

   polynomial #1: `x^3 + x^2 + x + 1`
   polynomial #2: `x - 1`
   result: `x^4 - 1`

   continue? `y`
   polynomial #1: `-3*x^3 + x + 5`
   polynomial #2: `0`
   result: `0`

   continue? `n`
   bye from polynomial multiplier

   Here are some polynomial pairs to test your function on:

   ```
   x^3 + x^2 + x + 1
   x - 1

   -3*x^3 + x + 5
   0

   x^3 + x - 1
   -5

   - 10*x^2 + 100*x + 5
   x^9999 - x^7 - x^5 + x + 3
   ```

   You can change the format of the input strings or the interaction sequence if you prefer something different. You can assume the input is syntactically correct.