Assignment #0 • APMA 900 • Introduction to Matlab & SFU Computing

- new students: *welcome to SFU.*
- report due Wednesday 12 September.
- primary purpose is to get everyone active in Matlab.
- within Matlab, *help xxx* gives info on command xxx, also try *helpdesk*.
- remember that the class e-mail (apma-900@sfu.ca) is open for discussion.

A) Download and run *wilk.m* – it should display three curves. The x-axis in black, and two polynomials

$$y_1(x) = (x-1)(x-2)\ldots(x-N) \qquad ; \qquad y_2(x) = a\,\frac{N(N+1)}{2}\,x^{N-1}$$

in blue and red (for $N = 7$ and $a = 0.00002$). Familiarize yourself with Matlab by playing with this simple plotting script. If you corrupt it, just download a new one.

Explain and illustrate (by the use of two plots), the main point of Wilkinson's example. You may write your explanation directly on your labelled plots.

B) Download and run *wpoly.m* – it is a function that evaluates $y_1(x) - y_2(x)$ as defined above. For the case $N = 7$, make a plot of the roots as a function of a. You may restrict yourself to the regime where the roots remain real. Can you numerically estimate the functional form suggested by Exercise 2b, page 23 of Holmes?

One possibility is to use the *fzero* command with *inline*. See *help fzero* for more information.

***)** Class members are expected to maintain a simple webpage. One similar in spirit to the class webpage (accessable from *www.math.sfu.ca/~muraki*). The most straightforward way is to use an html editor (like Netscape). Or a sample .html file is on the class webpage – it can be easily modified for your own use. One problem is locating and setting up your web files so that they are accessible by others – I'm hoping to find some documentation on this, but please let me know if you happen to know how to do this (see *http://www.sfu.ca/acs/sfuwebhelp/publish.htm*).