CE300 – MS OFFICE SESSION
HOMEWORK #2
Microsoft Excel

Due date: 06/07/2009

This homework is about MS Excel. Like in HW1, some parts of this homework are not discussed in the class and you may not be familiar with those. However, some useful hints are provided in the text and these will help you to find a solution. In addition, Help menu will be very useful if you are looking for a feature you aren't familiar with.

Submit your homework as a hardcopy. Softcopy submissions will not be accepted.

Part 1: Compute the following functions for [1, 100] and create a semi-log plot where x axis is in logarithmic scale and y axis is in linear scale. Display the variations of both functions with x on the same graph. Provide titles, major and minor grids for both axes and the legend of the graph. Set x axis varying between 1 and 100 and y axis ranging between -5 and 20. Set major and minor units of y axis as 5 and 2.5, respectively.

Additionally, fit a 3rd order polynomial trendline to $f_2(x)$ on the same plot. Display the equation and R^2 value of the trendline on the chart. *Hint:* MS Excel provides various useful features on the right-click menu depending on the object you've selected. Why don't you check the right-click menu for $f_2(x)$ on your chart.

Note that MS Excel performs trigonometric calculations in terms of radian. Here, x is given in degrees for trigonometric expressions. Thus, you should convert x from degrees to radians for trigonometric expressions. Use *PI()* function to formulate π in MS Excel.

$$f_1(x) = \frac{12}{x}\sqrt[3]{\ln(\pi x^2)} + \sin 5x \qquad f_2(x) = \left|\frac{tan^{-1}(x)}{\log_2(\pi x^2)} - exp\left(\frac{x^{0.9}}{\sqrt[2]{5x-3}}\right)\right|$$

Part 2: Find the values of x and y satisfying the following equations. Use x=10 for the initial estimate. *Hint:* MS Excel has an embedded iteration tool which is called Goal Seek. Note that Goal Seek will yield the closest root to your initial estimate. Thus, your initial estimate might be important for some cases.

$$\frac{\sqrt[2]{\log_2(\pi x^2)}}{1.3^y} = 6x - \frac{\sqrt[1.6]{exp\left(x/\pi^2\right)}}{\cos(3y-2)} \qquad y = \frac{6\pi x}{2^x - x^3} - \frac{\sqrt[0.75]{ln\left(2.4^x/x^2\right)}}{\sqrt[1.2]{\log_5(x^{2\pi})}}$$

Part 3: Write a Macro code to evaluate the following equations between x=0 and x=10 with unit increments (i.e. Δx=1). Your code should read the input parameters (i.e. x values) from MS Excel, perform all calculations within the program and write the results to the cells next to the input parameters. Submit your code and a 3-column table including inputs and outputs.

$$v = (5x+2)^{(1-x/4)}$$

$$z = \frac{\sqrt[2]{v+3^x}}{x!}$$