5 Homework

* Modify Newton's root finding method codes given in your textbook such that it reads inputs (d_{min}, ε, and the coefficients of polynomial) from a command line.
* Example: HW5.exe "10e-30" "0.00001" "2" "-3.5" "-3" "3.5" "1"

  In the given example above, the written parameters are d_{min}, ε, and the coefficients of the polynomial to be solved, respectively. For example given coefficients "2 "-3.5" "-3" "3.5" "1" are for the polynomial, $f(x) = x^4 + 3.5x^3 - 3x^2 - 3.5x + 2$

  Step 1: x_0 takes value from -10 to 10 with the increment 0.5.

  (i.e. 40 initial values are : -10, -9.5, -9, -8.5,...0,..., 9, 9.5, 10)

  Step 2 : For each initial value, apply the Newton's root finding method.

  Step3 : Display and write the different roots. (For some initial values your algorithm will find same roots, do not write same roots again and again.)

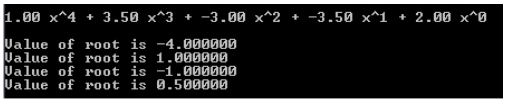

Figure 1:

* Your code also should handle the cycling problem in Newton's method. You can test your code with the function, $f(x) = \dfrac{1}{1+e^x} - \dfrac{1}{2}$.
* Create a text file named as "2017_HW5_StudentNumber_result.txt", and write the resulting roots of the given function in this text file .

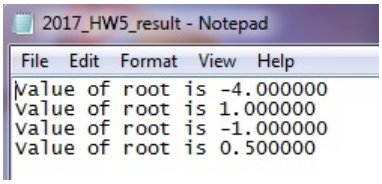

Figure 2:

Hint: *You have to modify both the function and derivative function part of the code. Also it is easy to differentiate a polynomial.*