**Computer Project #1, Root Finding by Using Newton’s Method**

1. Implement the Newton’s method for computing roots of functions.
2. Let . Derive f’(x) and hard-code the Newton’s method by using f(x) and f’(x).
3. Try the initial value x0= 10.0. Iterate the computation until |xn-xn-1|<10-6:
   1. Output the results iteration by iteration.
   2. The format:

N Xn f(Xn) |Xn-Xn-1|

1. Try another new initial value x0=-2.0.
   1. Out the results of all iterations.
   2. The format is the same as that of 3.b.
   3. Stop the program, if the number of iterations is greater than 15.
2. Compare the results of 3 and 4 and answer the following questions:
   1. Is the converge rate of 3 quadratic? Please verify your answer.
   2. Is the converge rate of 4 quadratic, linear, or never converged? Please verify your answer.
3. Hand-in your results two weeks later. You can discuss but don’t copy others’ results or fabricate the results.