**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=10.0.
   1. Out the results of all iterations.
   2. The format is the same as that of 3.b.
2. Modify your Newton’s method: XN+1 = XN – 2\*f(XN)/f’(XN) and repeat 4.a-4.b.
3. Compare the results of 3, 4, and 5 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 or linear? Please verify your answer.
   3. Is the converge rate of 5 quadratic? Please verify your answer.
4. Hand-in your results two weeks later. You can discuss but don’t copy others’ results or fabricate the results.