

CSCI3656: Numerical Computation

Homework 2: Due Friday, Sept. 18

Turn in your own writeup that includes your code. List any resources you used including collaborating with others. You will lose points if you use Matlab's Symbolic Toolbox. Submit a PDF on Canvas by Friday, Sept. 18 at 5pm.

1. Using the quadratic formula, compute the roots of $f(x) = 4x^2 - 3x - 3$. Show your work.
2. Implement bisection for root finding.
3. Transform the function f into an appropriate function g for a fixed point problem. Show your work.
4. Implement the fixed point method. Make sure you use good stopping criteria; see Sauer, section 1.2.4.
5. Using your implementations, plot the error of each method for the first 10 or so iterations. NOTE: You will need to fill in some details for this experiment. For example, you need to choose an initial guess for the fixed point method. And you need to choose an initial interval for the bisection method. Make reasonable choices and justify why they're reasonable. You are welcome to discuss these choices on Piazza. I'm happy to comment on Piazza posts.