

MATH 4334.001/CS 4334.001 Name : _____
Fall 2023
Computer Homework 3
Due 09/29/2023

Write MATLAB codes to solve the following problems. Your solution should include the source code, the relevant output, and a written explanation of what the output means.

1. Consider the equation

$$2x^3 - 6x - 1 = 0$$

- (a) Sketch the function by using the `plot` command on MATLAB.
- (b) Identify three intervals of length one that contain a zero.
- (c) Find the zeros in each interval to three correct decimal places.

2. The equation

$$x^3 = 2x + 2$$

has one zero. Use Newton's Method with initial guess $x_0 = 1$ to approximate this zero to eight correct decimal places.

3. Use the Secant Method to approximate the solution of the equation

$$e^x + x = 7$$

correct to eight decimal places, with initial guesses $x_0 = 1$ and $x_1 = 2$.