

Assignment 04

Third Year B.S. (Honors) 2019-2020

Course Title: Math Lab III Course Code: AMTH 350

Department of Applied Mathematics, University of Dhaka

Name:

Roll No:

Group:

Write a MATLAB Script-M file to solve each of the following problems.

No.	Problem
1.	Use the Bisection method to find an approximation with accuracy 10^{-5} , to a value in $[0.5, 1.5]$ for $f(x) = e^x - 2 - \cos(e^x - 2)$. Show your answer in a table with headings as follows: "Iteration No.", "a", "b", "c", " $ f(c) $ "
2.	Express the following equation as a fixed-point problem $x = g(x)$ in three different ways $x^3 - x + e^x = 0$ Use Fixed Point Iteration Method to find an approximation with accuracy 10^{-5} . Show your answers in a table with suitable headings. Comment on the convergence of choices of $g(x)$.
3.	Set $f(x) = 54x^6 + 45x^5 - 102x^4 - 69x^3 + 35x^2 + 16x - 4$. Plot the function on the interval $[-2, 2]$, and use the Secant Method to find all five roots in the interval. Show your results in a table with headings as follows: "Iteration No.", " x_n ", " <i>Abs error</i> ".
4.	Apply Newton's Method to find both roots of the function $f(x) = 14xe^{x-2} - 12e^{x-2} - 7x^3 + 20x^2 - 26x + 12$ on the interval $[0, 3]$. Print out the sequence of iterations, the errors e_i , and the relevant error ratio e_{i+1}/e_i^2 or e_{i+1}/e_i .