Brac University

Department of Electrical and Electronic Engineering

EEE282/ECE282: Numerical Techniques

Experiment No: 08
Experiment Name: **Solution to Non-Linear Equation**

Problem-1: Write the MATLAB functions implementing Bisection method and False-position method to determine a root within a given interval for any function.

Problem-2: Determine all the roots of the following function using Bisection method in the interval of $[0, 5]$ for the tolerance values of $10^{-3}, 10^{-4}, 10^{-5}$:

$$f(x) = x^2 - 3.68 \log_2(x) - 1.5$$

Plot the above function in MATLAB and determine the actual root from the graph.
Compare between the values of the numerically computed roots and the actual root.
For each of the tolerance values, how many iterations are required to converge to the roots?

Problem-3: Repeat the previous problem to find all the roots of the given function using False-position method.
Compare between Bisection method and False-position method in terms of number of iterations required.
Which method provides faster convergence for the given function?