

Lab 2 for Math 215

Wednesday - February 6th, 2008

Student's Name: _____

Instructions: Show all your work for full credit. Indicate your answers clearly.

Problem 1. Use the Bisection Method to find p_3 for $f(x) = \sqrt{x} - \cos x$ on the interval $[0, 1]$.

Problem 2. Use the Bisection Method to find a solution accurate to within 10^{-5} for the equation $x + 3 \cos x - e^x = 0$ on the interval $[0, 2]$

Problem 3. Let $f(x) = (x + 2)(x + 1)^2x(x - 1)^3(x - 2)$. To which zero of f does the Bisection Method converge when applied on the following intervals?

- a. $[-1.5, 2.5]$ b. $[-0.5, 2.4]$ c. $[-0.5, 3]$ d. $[-3, -0.5]$

Problem 4. On the same graph, sketch the graphs of the functions $f_1(x) = e^x - 2$ and $f_2(x) = \cos(e^x - 2)$ on the interval $[0, 2]$. Use the Bisection Method to find an approximation to within 10^{-5} to a value $x_o \in [0.5, 1.5]$ with $f(x_o) = g(x_o)$.

Problem 5. Find an approximation to $\sqrt[3]{25}$ correct to within 10^{-4} using the Bisection Algorithm.