

Aero 320: Numerical Methods

Lab Assignment 6

Fall 2013

Problem 1

Bisection method, Secant method and Regula falsi method

The function $f(x) = 2 \sin(x) - \frac{e^x}{4} - 1$ is zero for two values near $x = -5$.

- (a) Use *bisection method* to find both roots, starting with interval $[-7, -5]$ and $[-5, -3]$. How many iterations are needed to get results that agree to 5 significant digits?
- (b) Use *secant method* to find both the roots. How many iterations are needed now?
- (c) If the *regula falsi* method was used, and the methods were ordered from fewest to most number of iterations required for convergence, what would you expect the order to be?