

Math 421 – Lab 2

Chapter 2, Sec 2.2 & 2.3

Fixed-point, Newton's and Secant methods

1. Use a fixed-point iteration method to determine a solution accurate to within 10^{-3} for $g(x) = 1 + e^{-x}$, use $p_0 = 1$. Without exceeding 20 iterations.

2. Given $f(x) = 3x^2 - e^x$
 - a. Find an interval that $f(x) = 0$ has a positive root.
 - b. Use Newton's method to find a positive solution accurate to within 10^{-4} .
 - c. Perform 3 iterations of the secant method with $p_0 = 0$ and $p_1 = 1$.