

Engineering Analysis

Homework 3

April 9, 2017

1. Solve the following problems using Newton's and the secant method, and compare the results of the two methods.
 - (a) $f(x) = \cos(x) - x, x_0 = 0.5$.
 - (b) $f(x) = x^2 + 1, x_0 = 10$.
2. Compute the root(s) of the following nonlinear system in 4D space using Newton's and Broyden's methods.

$$\begin{aligned}w^2 + x^2 + 3y^2 - z^3 - 5 &= 0 \\w + x^3 - 2y^2 - 10z &= 0 \\20 - w + x^2 + y^3 + z^2 &= 0 \\w^3 + x - y^3 + z - 10 &= 0\end{aligned}$$