

Homework 3

Work,

Burden-Faires: 2.4.1(a,b), 2.4.3(a,b)

1. Consider the function:

$$g(x) = 1 + (\sin(x))^2 \quad \text{with} \quad x_0 = 1.$$

Iterate this map to a fixed point and determine how many steps are required to have accuracy to 10^{-5} . Implement Steffensen's method in MatLab (or other language) and determine how many steps are required to have accuracy to 10^{-5} . Finally, make this problem into a root finding problem and use Newton's method to find the equivalent root (same as fixed point). Determine how many steps are required to have accuracy to 10^{-5} .

2. Implement Müller's method in MatLab (or other language). Use to solve **BF-2.6.7(bce)**, but go up to accuracy 10^{-8} . Turn in your code for Müller's method, and the iteration tables $\{x_k, f(x_k)\}_{k=0}^n$ for all problems.