Assignment: Module 3 Name: Hoyoung kim

Disclaimer: This is my work, not that of others

Total Score: 110

1. 10
2. 10
3. 10

1. Use simple, fixed-point iteration to find a zero of the equation x-cosx = 0. Use a calculator. Make sure your calculator is in radian mode, not degree mode. Describe the steps you used to find the root. Explain why your procedure converged to a solution. (10 pts.)   
   
2. Use Newton’s method to solve the following:   
   
 a. Form an equation whose root will yield the square root of the number a. Write the   
iteration formula to solve this equation using Newton’s method. Use the formula with a   
calculator or a Python program to find the square root of 3. Report how many iterations   
the process took. (10 pts.)   
   
 b. Repeat the previous part to find the cube root of 3. (10 pts.)   
   
3. When solving the equation x^2-3x+2 =0 by simple, fixed-point iteration, you can rearrange   
the evaluation as x = g(x) in different ways. First, solve for x = g(x) by isolating the middle term.   
Second, solve for x = g(x) by adding x to both sides of the original equation. For each case:   
   
a. In what interval can you choose an initial guess for the iteration that will guarantee that   
the iteration will converge to a root? (10 pts.)   
   
b. What is the order of convergence near the root where your formula converges in each   
case? (10 pts.)   
   
4. Problem 6.4 parts (a) and (d) (10 pts.)