

HW#2 Solution of Nonlinear Equations

Instructions: Read Chapters 5 and 6 of the text book.

1. Sketch the function $f(x) = x^3 - 4x + 1$ in the interval $[-1,1]$ then use Bisection method to find the root accurate to two decimal digits rounded. Start with the initial interval $[0,1]$.
2. Find the positive square root of 17 using the bisection method to with error < 0.1 . Employ the initial interval $[4,4.5]$.
3. Perform four iterations of Newton-Raphson method to obtain an estimate of the root of $f(x) = x^3 - 4x + 1$. Use $x_0 = 0$.
4. Perform four iterations of Secant method to obtain an estimate of the root of $f(x) = -2x^6 - 1.5x^4 + 10x + 2$. Use $x_0 = 0.4, x_1 = 0.5$
5. Problem 6.9 (page 158) a, b, c, d
6. Problem 6.12 (Page 158) b (Do three iterations only).