QUIZ Number 1
Time: 25 minutes

Question 1. Given the equation $f(x) = x^3 - 2x + 9.5 = 0$ in the interval $[-3, -2]$. Suppose $p^* = -2.4283$ is an approximation of the root of the above equation. Find the error of p^*.

Question 2. Given the equation $f(x) = x^4 + 2x - 5.5 = 0$ in the interval $[1.0, 1.6]$. Use the bisection method to find x_5.

Question 3. Given the equation $x = g(x) = \sqrt[3]{22.4 - 2x}$ in the interval $[2, 3]$. Using the iterative method, calculate the coefficient $k = \max\limits_{x \in [2,3]} |g'(x)|$ and x_7. Use $x_0 = 2.5$.

Question 4. Given the equation $f(x) = 2.2x^2 + 2\sin(x) - 2.1 = 0$ in the interval $[0, 1]$. Using Newton's method, calculate x_2 and its error.

SOLUTION

1. $\Delta_{p^*} = 0.003779$
2. $x_5 = 1.3094$
3. $k = 0.1033, \quad x_7 = 2.583$
4. $x_2 = 0.6414, \quad \Delta_{x_2} = 0.000877$