MATH 373 Project 2 (150 points)

Due on 10:50 AM of March 21st, 2025
Please submit your report, source codes, and envroment which TA can run your codes

Implement the bisection, Newton, and secant methods for solving nonlinear equations in one dimension, and test your implementations by finding at least one root for each of the following equations.

$$f_1(x) = x^2 - 4\sin(x) \quad (1)$$
$$f_2(x) = x^2 - 1 \quad (2)$$
$$f_3(x) = x^3 - 3x^2 + 3x - 1 \quad (3)$$

1) What termination criterion should you use?

2) What convergence rate is achieved in each case?

3) Compare your results (solutions and convergence rates).