

ME3001 - Spring 2024

Weekly Activity 1: Roots of Non-Linear Equations

The Netwon-Raphson Method

Overview :

In this activity, you will practice using the Newton-Raphson method to approximate the roots of a polynomial. MATLAB will be used to implement the solution approach.

Assignment :

1. Solve the example problem shown in Non-Linear equations notes using Newton-Raphson in MATLAB. The goal is to verify the analytical solutions (aka roots) found in class to the polynomial shown below.

$$y(x) = x^2 + 2x - 10$$

Deliverables :

- Write a MATLAB program that uses the Newton-Raphson method to find both roots of the equation. One option would be to use the same program twice with different starting guesses. Submit the .m file(s) used and document any example code that you used or learned from during the exercise.
- For each root show the starting guess used and the final approximate root (x value) and function value (y value) at the approximate root. The results can be copied or typed into the text for the assignment or included as a comment in the code.