Lab 5 Daily Evaluation (4 Marks)

1. Using the polynomial function from Part-2, error_1 function from Part-1 and error_2 function from Part-2, find the differentiation errors when

    - hs = [3.5, 0.55, 0.3, .17, 0.1, 0.055, 0.03, 0.017, 0.01], and
    - x = 2.75

    Plot "error vs h" curves for each of the five errors in a single graph (There should be plots of 5 equations in your graph, i.e., graphs for errors that you achieved using functions of central, forward, backward, dh and dh1 methods).

2. Let,

$$f(x) = x^5 + 2.5x^4 - 2x^3 - 6x^2 + x + 2$$

    a. Using Richardson's Extrapolation, what is the slope of f(x) at x=0,−1.18625 and step size = 0.1?

    b. Compare the error of your method with actual, forward, backward and central differentiation at x=0,−1.18625

    c. Plot actual derivative, Forward derivative, Backward derivative, Central derivative and the derivative using Richardson's Extrapolation in a graph. Here,

$$h = 0.1, -2 \leq x \leq 1.2$$

Submission Form : Click Here