

MAT 120

Homework 4

Deadline: December 19th, 2024

Problem Statement:

Calculate the second derivative of the following function:

$$f(x) = e^x \sin(x)$$

Steps to Solve:

1. **Step 1:** Calculate the exact derivative at $x = 1.5$.
2. **Step 2:** Calculate the derivative using the Forward Difference Scheme, Backward Difference Scheme and Central Difference Scheme at $x = 1.5$, with $h = 0.05$ Follow Class note for formula.
3. **Step 3:** Analyze the error in each numerical technique.