Numerical Analysis- ME 542

Assignment-5

March 19, 2021.

Instructions

1. Write down the main steps in setting up a program to solve this two-point boundary value problem using the finite-difference method.

$$x'' = x \sin t + x' \cos t - \exp t$$

$$x(0) = 0, \quad x(1) = 1;$$

All the preliminary work before programming should be neatly reported. Exploit the linearity of the differential equation. Make a program and compare the results when different values of n are used, say, $n = 10,\ 100,$ and 1000. Use the solvers you have already developed as a part of ME542.