AE305 Numerical Methods for Aerospace Engineering

A depository Contains Homework Solutions of AE305 Numerical Methods in Aerospace Engineering course of METU

Homework 1 - Solution of ODE's

- Explicit Euler Method
- Heun's Method
- RK2 Methods

Homework 2 - Solution of System of ODE's

- Solution of system of ODE's using RK4 Method
- Shooting method is used
- Adaptive Time-stepping is implemented

Homework 3 - Finite Volume Method

- Solution of 2D potential flow field (Laplace's Equation)

Homework 4 - Solution of Unsteady Heat Conduction/Diffusion Equation using FDM

- Solution of Heat Conduction/Diffision equations using FDM
- Using various parameters and discretization schemes

Homework 5 - Solution of Elliptic PDE using FDM

- Solution of transverse displacement of an elastic membrane under a transverse load (Poissions Equation)
- Point Jacobi, Gauss-Seidel and Successive Over-Relaxation (SOR), and Alternating Direction Implicit (ADI) are employed