

Examples solving an ODE using finite elements method. Mathematica and Matlab implementation and animation

Nasser M. Abbasi

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This report is a basic review of weighted residual methods and FEM. Some basic differential equations are used to illustrate the method. Mathematica and Matlab code written to solve numerically a first and second order ODE using FEM.

1 report

HTML

2 Animation

First order ODE (generated by Mathematica)

1. one
2. two
3. three
4. four

Mathematica notebook which solves first order by FEM. notebook

second order ODE animation (generated by Matlab) animation

Matlab driver file This file sets up the call to do FEM and the animation

Matlab function to solve ODE using FEM This file does FEM solution on general second order ODE