

# ME 793 - Assignment 7

Department of Mechanical Engineering, IIT Bombay

Spring 2021

Due Date: 10:30 AM, Apr 10, 2022, Marks 10

Assignment Date: 10:30 AM Thu, Mar 31, 2022

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## Objective and Instructions

1. The objective is to apply autograd for solving an ODE and understand how neural networks work. Use **Tutorial 12 (Autograd)**.
2. No external data is needed.
3. This assignment needs to be performed using Jupyter Notebook or Google Colab Notebook or only.
4. Submit Jupyter Notebook and your data file to Moodle.

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**Q 1.** Solve equation  $\frac{dy}{dx} = 2x^4 + \exp(-x); y(x=0) = 0$  using neural network. Start from Tutorial 12.

**Q 2.** Show the effect of number of layers and neurons in each layer on the solution and solution time. You need to show your answer as graphs.

Your Jupyter Notebook must show various decorated plots as appropriate for clearly understanding the problem setup, methodology and model outcome.

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