

Numerical Analysis - Homework 3

Professor:

Dr. Joanna Bieri
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Office Hours:

Check the class website for office hours: numericalanalysis.joannabieri.com

Prepare for Class:

1. Watch Lectures:
 - Taylor Polynomials Intro
 - Taylor Polynomials Notebook Demo
2. Read Book:
 - Chapter 1.1 The Taylor Polynomial
3. To Do:
 - Look at the provided code TaylorPolynomial.ipynb - see if you can figure out what each line of the code is doing.
 - Add comments explaining each line - ask if you are not sure.
 - Start the homework.
4. Make a list of questions for your group and professor. You can post these questions to your group channel.

Homework Problems

You should attempt all these problems before class, but we will work on them in class with our groups.

- Problems 2, 3, 4, 11, 13

Most of these are actually hand written problems, but you can present your work by typing them up in the Jupyter Notebook. For problem 2 use the Jupyter Notebook to plot graph the functions and the polynomials. You don't have to use my code, but it's okay if you do. Choose one of the functions from problem 3 and plot it and its polynomials degree 1-4, similar to how we did the example. Talk about what you see happening in the graph.

Hand In Code and Check In

Due Sunday Sept 10th - Homeworks 3 and 4

- PDF document - your weekly narrative:
 1. What is one piece of Numerical Analysis knowledge that you are proud of gaining this week?
 2. What is one piece of Numerical Analysis knowledge that you struggled with most this week?
 3. What is one area where you are reaching beyond the class comment to continue to challenge yourself?
 4. In what specific ways have you contributed to your group during class periods?
 5. What goals do you have for yourself in the next week of class?
- A link to your CoLab code with the homework problems. Your CoLab notebook should also contain markdown cells that describe your solutions.

Other Notes:

In Markdown/Text, you can surround your equations with dollar signs to get pretty LaTeX style equations. For example the LaTeX code:

```
$ \sqrt{x} \sim \sqrt{a} + \frac{1}{\sqrt{a}}(x-a) + \frac{x^{\frac{3}{2}}}{2!}(x-a)^2 + \dots$
```

Prints: $\sqrt{x} \sim \sqrt{a} + \frac{1}{\sqrt{a}}(x-a) + \frac{x^{\frac{3}{2}}}{2}(x-a)^2 + \dots$