

# Math 241, Spring 2022 — Homework 9

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Due April 19 at 11:30 am

**Instructions.** This problem set covers material in preparation for the group presentation.

**Problem 1.** In preparation for class time on April 19, 21, and 26, which will be devoted to working in groups on your project topics, I'd like you to read and take notes on the material in the textbook related to your project topic. The goal as you take notes is to start to get a baseline understanding of the topic through definitions and basic examples, to write down questions for me and for groupmates about what you don't understand yet, and to begin thinking about how and what you might present to classmates. It's ok if you don't understand everything yet, but I'd like you to at least look at each section of the reading. I'd like you each to take at least 1-2 pages of notes, including at least 2-3 questions you have about the material.

1. Topic 1: Complex iteration and Julia sets. Sections 15.1, 16.1, 16.4, 16.5
2. Topic 2: Chaos and Feigenbaum's constant. Sections 8.1, 8.2, 10.3, 10.4.
3. Topic 3: Fractals with a focus on Iterated Function Systems. Sections 14.1, 14.8, 14.9
4. Topic 4: Fractals with a focus on the Sierpinski triangle and Sierpinski carpet. Sections 14.3, 14.4, 14.6, 14.7.
5. Topic 5: Newton's method. Chapter 13.