

Math 241, Spring 2026 — Project assignment 0

Tim Chumley

Due April 3 at 5:00 pm

Our end of semester project is coming up and I'd like us to start thinking about it. The goal of the project will be for you to work together to learn and communicate about a topic on dynamical systems that hasn't been discussed in class. You'll work in groups of 2-4 people and give a short presentation 15-25 presentation on it (the precise time will be determined after the number and size of groups is finalized). I have some suggested topics listed below. Each topic is introduced in our textbook. You may also use other outside resources to learn about the topic as well.

Problem 1. As your submission for this assignment, please tell me which topics interest you. For most of the suggestions below, there is much more material than one group could cover and the textbook goes into more depth than you'll be able to present on. Part of your work in the lead up to the presentation will be to do some exploration of the topic and pare the content down. Please give me more than one preference and a ranking, any reasons for your choices. Please also feel free to state a preference for a topic that's not listed below, but please come talk to me about it. The sections and chapter numbers refer to our textbook. The module numbers refer to another textbook, [Discovering Discrete Dynamical Systems](#)¹.

1. Feigenbaum's constant (see Section 10.4 and Module 7)
2. The period-3 theorem and Sharkovsky's theorem (see Chapter 11 and Module 6)
3. Newton's method (see Chapter 13)
4. The chaos game, fractals, and iterated function systems (see Chapter 14 and Module 10)
5. Two-dimensional dynamical systems (See Module 9)
6. Dynamics of complex functions (Chapter 15 and Module 11)
7. Julia sets (Chapter 16 and Module 12)

Problem 2. Please tell me if you have someone you'd like to work with and whether you've discussed whether you have shared preferences. It's ok if you don't have someone to work with. If that's the case, I will try to pair you with others who share topic preferences.

¹One of the authors, Ayse Sahin, is a Mount Holyoke alum!