Projects

Now that we understand the basics of chaotic dynamical systems, the goal of the last part of the course is for you to explore ways in looking at applying the theory to new models (we've focused on $Q_c(x) = x^2 + c$).

Schedule:

- This week: Today, I would like for you to think about and decide upon a topic (at most 2 people for each). We will break, and during the rest of the week, you will be preparing for a twenty minute in-class presentation of your topic. If there are two people doing your topic, you should try to split the presentation (each person does 20-25 minutes).

  I will be available in my office during our usual class sessions. Please be sure that you do some work this week!

- Week after break: Presentations, 2 per day.

- Last week: Presentations, continued.

In addition to the in-class presentation, you will write a paper on your topic. Papers should be long enough and in enough detail so that other members of the class can understand them. Your paper should be at least 5 pages in length, but try not to go beyond 10 pages (with a lot of figures, you could easily go beyond that, but try to do some editing).

If you do not know LaTeX (if you have not had Calc Lab), then you may write your project in long hand, but in that case, be sure your final version is very neat!

Assessment: 25% will be in-class, the rest will be based on the paper you turn in. The in-class assessment will include a peer assessment, so it will be important for everyone to attend every session.

Possible topics:

- Fractals (Ch 14)
- Julia Sets (Ch 15, 16)
- Mandelbrot Set (Ch 15, 17)
- Complex Newton's Method (Ch 15, 18.5)
- The Lorenz Attractor (Math 244 required)
- The Complex Exponential (Ch 15, 18.3 and other material)