

Chaos & Fractals

Coursework (Late semester version, for students who missed the mid-term coursework with ECs)

Question 1 carries 40% of the marks, questions 2 and 3 each carry 30% of the marks.

Your solutions must be handwritten (with a proper pen on proper paper). Include your name and student ID number.

The submission deadline is 5pm on Friday 12th December.

To answer the questions, you are encouraged to consult your own lecture notes, the official handwritten lecture notes on QMPlus, and the QReview lecture videos.

You are welcome to use other resources, but ensure that your written answers are your own - if your answers very closely resemble those of other students (e.g. using identical sentences, etc.) then you will likely score very low marks for originality (and risk being investigated for collusion - this may involve an additional oral exam to test understanding and/or a formal misconduct process). Similarly, if any answers appear to be generated by an AI then this will likely score low marks and/or be investigated.

Question 1. Write a short (up to 1000 words) summary, in your own words, of the content of the first 6 weeks of Chaos & Fractals lectures, being sure to compare and contrast some of the specific dynamical systems (or classes of dynamical systems) that were encountered.

Question 2. Pick a question on one of the first three exercise sheets that you struggled to solve, and describe (in up to 500 words) the process of grappling with this problem. (Hints: describe the problem itself, your initial approach, if and how you overcame the challenge, and what you learned from the experience).

Question 3. Consult the handwritten lecture notes on QMPlus for Week 2 of the module. Explain, in up to 200 words, the relation between the picture at the top of page 7, the two mini-pictures on page 10, and the Corollary stated at the bottom of page 11.