

Homework Assignment 7

Use **Matlab** to solve the following problems.

Given an iterated map of

$$f(x_n) = \begin{cases} \mu x_n & \text{if } 0 \leq x_n \leq 0.5 \\ \mu(1 - x_n) & \text{if } 0.5 < x_n \leq 1 \end{cases}$$

Iterate the function by selecting a random initial point (within the domain) for at least 200 iterations, then

1. Let $\mu = 0.8$ and randomly select a few initial points (within the domain). Plot the iterated points and explain what you observe about the map.
2. Let $\mu = 1.004$ and randomly select a few initial points (within the domain). Plot the iterated points and explain what you observe about the map.
3. Let $\mu = 1.03$ and randomly select a few initial points (within the domain). Plot the iterated points and explain what you observe about the map.

(80% for correctness, 10% for programming writing, 10% for presentation)