Introduction to Dynamical Systems and Chaos (Winter, 2015)
3.10 Test » Unit 3 Test

Instructions 1

You may use any course materials, videos, websites, calculators, etc. for this test. Just don't ask another person for the answers or share answers with other people. Please do not post questions about the test on the forum. If you have questions, please send them via email chaos@complexityexplorer.org. Thanks.

Question 2

What is the long-term behavior of almost all orbits for the logistic equation with r=3.3?

- The orbits approach a fixed point
- The orbits approach a cycle of period two
- The orbits approach a cycle of period three
- The orbits approach a cycle of period four
- The orbits do not appear to be periodic.

Question 3

What is the long-term behavior of almost all orbits for the logistic equation with r=3.77?

- The orbits approach a fixed point
- The orbits approach a cycle of period two
- The orbits approach a cycle of period three
- The orbits approach a cycle of period four
- The orbits do not appear to be periodic .

Question 4

Which of the following are true for a chaotic dynamical system?

- It is deterministic
- Its orbits are aperiodic
- Its orbits are bounded
- It has sensitive dependence on initial conditions
- All of the above

Question 5

Does the logistic equation with r=3.77 appear to have sensitive dependence on initial conditions?

- Yes
- No

Question 6

Does the logistic equation with r=2.9 appear to have sensitive dependence on initial conditions?

- Yes
- No

Question 7

If a very long sequence of symbols is incompressible, we would say that it is

○ Random

○ Not Random

Question 8

A very long sequence of random symbols

○ Must have been generated by a stochastic process such as a coin toss.

○ Must have been generated by a deterministic dynamical system

○ Could have been generated by either a stochastic process or a deterministic dynamical system

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Question 9

If a dynamical system has sensitive dependence on initial conditions, then

○ A. It is impossible to perform long-term prediction

○ B. Very small differences in initial conditions make a large difference in the orbits

○ C. The dynamical system must not be deterministic

○ D. A and B are true

○ E. A, B, and C are true

Question 10

What are the first three values of the orbit of the seed 0.9 for the logistic equation with r = 3.7?

○ 0.9, 0.3, 0.3

○ 0.9, 0.333, 0.82181

○ 0.9, 0.21, 0.489

○ 0.9, 0.1, 0.597

○ 0.9, 0.415, 0.7182