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Nonlinear Dynamics: Mathematical and Computational Approaches
Lead instructor: ✉ Liz Bradley

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✓ 4.4 Attractors, strange and otherwise » Quiz   ← Prev   Next →

Quiz scores are NOT recorded.
- You may come back to quizzes and take them as many times as you like
- When you are finished, clicking the "Score" button at the bottom of the test will show you the correct responses.

Question 1

Stable and unstable manifolds play no role in the shape of a chaotic attractor.

- ○ A. True
- ✓ ● B. False

Question 2

Stable manifolds have the effect of compressing state space.

- ✓ ● A. True
- ○ B. False

Question 3

Unstable manifolds have the effect of compressing state space.

- ○ A. True
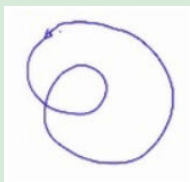- ✓ ● B. False

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Question 4

An attracting fixed point in an n-dimensional nonlinear dynamical system lives at the intersection of n stable manifolds.

- ✓ ● A. True
- ○ B. False

Question 5

Here's a picture of a periodic orbit of a nonlinear dynamical system.

What can you say, from the picture above, about the dimension of that system?

- ○ A. Nothing
- ○ B. The state space has one dimension
- ○ C. The state space has two dimensions
- ✓ ● D. The state space has at least three dimensions
- ○ E. The periodic orbit is an attractor

Question 6

There is at least one stable manifold associated with every point on an attracting periodic orbit in a nonlinear dynamical system.

- ✓ ● A. True

B. False

Question 7

The Lorenz system has three state variables and two parameters.

A. True

✔ ● B. False

Question 8

The Lorenz system models a spring-loaded pendulum (like the simple harmonic oscillator on a pivot).

A. True

✔ ● B. False

Question 9

There are two stable fixed points in the dynamics of the Lorenz system for some values of the system's parameters.

✔ ● A. True

B. False

Question 10

There is a chaotic attractor in the dynamics of the Lorenz system for some values of the system's parameters.

✔ ● A. True

B. False

Question 11

Nonlinear dynamical systems can have lots of attractors in different regions of their state space, but only one type at a time (i.e. all fixed points, all periodic orbits, or all chaotic attractors).

A. True

✔ ● B. False

Question 12

The basins of attraction of different attractors in a dynamical system can overlap.

A. True

✔ ● B. False

Question 13

Lorenz was the first person to recognize chaos. (*Experts*: neglect Poincare, who did a lot of things before others did, including write down $e=mc^2$!)

✔ ● A. True

B. False

Question 14

Lorenz was the first person to use the term "chaos" for this kind of behavior.

A. True

✔ ● B. False

You got **14** out of **14** questions correct   Reset