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Nonlinear Dynamics: Mathematical and Computational Approaches

Lead instructor: [Liz Bradley](#)

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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

Do conservative systems have attractors?

- ☐ A. Yes
- ✓ ☒ B. No

Question 2

Can conservative systems be chaotic?

- ✓ ☒ A. Yes
- ☐ B. No

Question 3

How do you know if a point is a fixed point of the dynamics?

- ☐ A. The trajectory starts there
- ✓ ☒ B. Trajectories never leave that state
- ☐ C. If the system is at that state and you perturb it, that perturbation will shrink

Question 4

How do you know if a point is a stable fixed point of the dynamics?

- ☐ A. The trajectory starts there
- ☐ B. Trajectories never leave that state
- ✓ ☒ C. If the system is at that state and you perturb it, that perturbation does not grow and trajectories never leave that state without external influence

Question 5

The following points in the state space of the damped pendulum are:

(a)

$$\theta = 0, \omega = 0$$

- ✓ ☒ A. Stable fixed point
- ☐ B. Unstable fixed point
- ☐ C. Not a fixed point

(b)

$$\theta = 0, \omega = \pi$$

- ☐ A. Stable fixed point
- ☐ B. Unstable fixed point
- ✓ ☒ C. Not a fixed point

(c)

$$\theta = \pi, \omega = 0$$

- ☐ A. Stable fixed point
- ✓ ☒ B. Unstable fixed point
- ☐ C. Not a fixed point

(d)

$$\theta = 2\pi, \omega = 0$$

- ✓ ☒ A. Stable fixed point
- ☐ B. Unstable fixed point
- ☐ C. Not a fixed point

(e)

$$\theta = 3\pi, \omega = 0$$

- ☐ A. Stable fixed point
- ✓ ☒ B. Unstable fixed point
- ☐ C. Not a fixed point

You got 9 out of 9 questions correct

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