

Unit 4 - Week 2

Course outline

How does an NPTEL online course work?

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Week 2

- More on orbits
- Periods of Periodic Points
- Scrambled Sets
- Quiz : Assignment 2
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Assignment Solution

Assignment 2

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-02-12, 23:59 IST.

1) In a Dynamical system, the set of eventually periodic points is;

1 point

- Not necessarily closed.
- Always closed.
- Always open.
- Not necessarily open.

No, the answer is incorrect.
Score: 0

Accepted Answers:
Not necessarily closed.
Not necessarily open.

2)

$$\text{For the map } f: \mathbb{R} \rightarrow \mathbb{R} \text{ defined as } f(x) = \begin{cases} x+2 & x \leq -1 \\ -x & -1 \leq x \leq 0 \\ 2x & 0 \leq x \end{cases}$$

1 point

- There is no periodic point.
- There are exactly three periodic points.
- There is only one periodic point.
- The set of periodic points is dense.

No, the answer is incorrect.
Score: 0

Accepted Answers:
There is only one periodic point.

3) In a given Dynamical system (X, f) , for any $x \in X$;

1 point

- $\overline{\mathcal{O}(x)}$ may not be a minimal subset.
- $\overline{\mathcal{O}(x)}$ is always a minimal subset.
- $\overline{\mathcal{O}(x)}$ is never a minimal subset.
- $\overline{\mathcal{O}(x)}$ is always completely invariant.

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $\overline{\mathcal{O}(x)}$ may not be a minimal subset.
 $\overline{\mathcal{O}(x)}$ is always completely invariant.

4) Which of the following are true;

1 point

- Rational rotation on the unit circle is a minimal system.
- $f(\theta) = 2\theta \pmod{2\pi}$ on \mathbb{S}^1 is minimal.
- In an infinite dynamical system (X, f) , if there is a periodic point in X , then (X, f) will not be minimal.
- In an irrational rotation on \mathbb{S}^1 , any finite arc of circle is an invariant set.

No, the answer is incorrect.
Score: 0

Accepted Answers:
In an infinite dynamical system (X, f) , if there is a periodic point in X , then (X, f) will not be minimal.

5) For a set $A = \{1200, 896, 1120, 720\}$, which of the following is/are true in Sarkovskii's ordering;

1 point

- Min. $A = 896$.
- Min. $A = 1200$.
- Max. $A = 1120$.
- Max. $A = 720$.

No, the answer is incorrect.
Score: 0

Accepted Answers:
Min. $A = 896$.
Max. $A = 720$.

6) Who gave the first definition of Chaos;

1 point

- J. Auslander.
- Tien-Yien Li and James A. Yorke.
- Robert L. Devaney.
- Oleksandr Mykolaiovych Sharkovskii.

No, the answer is incorrect.
Score: 0

Accepted Answers:
Tien-Yien Li and James A. Yorke.

7) VII. Let (X, d) be a metric space, then for a Scramble set S in a dynamical system

1 point

- S can be empty.
- S is always non-empty.
- S is always closed.
- S is always open.

No, the answer is incorrect.
Score: 0

Accepted Answers:
 S can be empty.