

Sequences and Limits Quiz PDF

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Which sequences are examples of geometric sequences?

- $a_n = 2^n$
- $a_n = 3n + 1$
- $a_n = 5 \cdot 3^n$
- $a_n = n^2$

Which methods can be used to find the limit of a sequence?

- Direct substitution
- L'Hôpital's Rule
- Graphical analysis
- Squeeze Theorem

Explain how you would determine if a sequence is arithmetic or geometric, providing examples for each.

Explain the difference between a convergent and a divergent sequence.

What is the limit of the sequence $a_n = n^2$ as n to infinity?

- 0
- 1
- Infinity
- Does not exist

Provide an example of a sequence that converges to a limit and explain why it converges.

How can the Squeeze Theorem be used to determine the limit of a sequence? Provide an example.

What is the first term of the Fibonacci sequence?

- 0
- 1
- 2
- 3

Which term represents the general term of a sequence?

- a_0
- a_n
- a_1
- $a_{\{n+1\}}$

Which sequence converges to a limit?

- $a_n = n$
- $a_n = (-1)^n$
- $a_n = 1/n$
- $a_n = n^2$

What is the limit of the sequence $a_n = 1/n$ as n to infinity?

- 0
- 1
- Infinity
- Does not exist

Describe the epsilon-delta definition of a limit and its significance in calculus.

What are possible values for the limit of a convergent sequence?

- 0
- 1
- Any real number
- Infinity

Which of the following is an example of a recursive sequence?

- $a_n = 2n + 1$
- $a_n = 3^n$
- $a_n = a_{n-1} + a_{n-2}$
- $a_n = n^2$

Discuss the importance of sequences and limits in real-world applications.

Which of the following sequences have a limit of zero?

- $a_n = 1/n$
- $a_n = 1/n^2$
- $a_n = n$
- $a_n = 1/\sqrt{n}$

What is the common difference in the arithmetic sequence 5, 10, 15, 20, ...?

- 2
- 3
- 5
- 10

Which of the following sequences is geometric?

- 1, 2, 3, 4, ...
- 2, 4, 8, 16, ...
- 5, 10, 15, 20, ...
- 1, 3, 5, 7, ...

Which of the following are characteristics of an arithmetic sequence?

- Constant difference between terms
- Constant ratio between terms
- Linear growth

Exponential growth

Which sequences are divergent?

$a_n = n$

$a_n = 1/n$

$a_n = (-1)^n$

$a_n = n^2$