

41 Lecture - MTH101

Important Mcqs

Which of the following is a recursive formula for the Fibonacci sequence?

- a) $f_n = n^2$
- b) $f_1 = 1, f_2 = 1, f_n = f_{n-1} + f_{n-2}$
- c) $f_n = n!$
- d) $f_n = 2^n$

Answer: b) $f_1 = 1, f_2 = 1, f_n = f_{n-1} + f_{n-2}$

What is the n th term of the arithmetic sequence 2, 5, 8, 11, ...?

- a) $2n + 1$
- b) $3n + 1$
- c) $3n - 1$
- d) $2n + 2$

Answer: d) $2n + 2$

Which of the following tests is used to determine whether an infinite series converges or diverges?

- a) Comparison test
- b) Limit comparison test
- c) Integral test
- d) All of the above

Answer: d) All of the above

What is the sum of the geometric series $1/2 + 1/4 + 1/8 + \dots + (1/2)^n + \dots$?

- a) 1
- b) 2

c) $3/2$

d) $4/3$

Answer: c) $3/2$

Which of the following is a bounded sequence?

a) $\{n^2\}$

b) $\{(-1)^n\}$

c) $\{1/n\}$

d) $\{n/(n+1)\}$

Answer: d) $\{n/(n+1)\}$

Which of the following is an example of an arithmetic sequence?

a) 1, 3, 9, 27, ...

b) 1, 2, 4, 8, ...

c) 2, 4, 8, 16, ...

d) 1, $1/2$, $1/4$, $1/8$, ...

Answer: b) 1, 2, 4, 8, ...

What is the n th term of the geometric sequence 1, 2, 4, 8, ...?

a) 2^n

b) $2n$

c) n^2

d) $n!$

Answer: a) 2^n

Which of the following is an example of a divergent series?

a) $1/2 + 1/4 + 1/8 + \dots + (1/2)^n + \dots$

b) $1 + 1/2 + 1/3 + \dots + 1/n + \dots$

c) $1 - 1/2 + 1/3 - \dots + (-1)^n/n + \dots$

d) $e^x = 1 + x + x^2/2! + x^3/3! + \dots$

Answer: c) $1 - 1/2 + 1/3 - \dots + (-1)^n/n + \dots$

What is the limit of the sequence $\{1/n\}$ as n approaches infinity?

a) 0

b) 1

c) -1

d) Does not exist

Answer: a) 0

Which of the following is a formula for the n th term of a geometric sequence?

a) $a_n = a_1 + (n-1)d$

b) $a_n = a_1 * r^{(n-1)}$

c) $a_n = n^2$

d) $a_n = a_1 + r^n$

Answer: b) $a_n = a$