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 nth 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 $1/2 + 1/4 + 1/8 + ... + (1/2)^n + ...?$

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 nth 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) $1/2 + 1/4 + 1/8 + ... + (1/2)^n + ...$
- b) $1 + 1/2 + 1/3 + \dots + 1/n + \dots$
- c) 1 $1/2 + 1/3 ... + (-1)^n/n + ...$

d) $e^x = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \dots$

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

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 nth 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