

44 Lecture - MTH101

Important Mcqs

Which of the following series is an alternating series?

- a. $\sum_{n=1}^{\infty} \frac{1}{n^2}$
- b. $\sum_{n=0}^{\infty} \frac{(-1)^n}{n}$
- c. $\sum_{n=1}^{\infty} \frac{1}{2^n}$
- d. $\sum_{n=1}^{\infty} \frac{(n+1)}{n^2}$

Answer: b

What is the alternating series test used for?

- a. To determine if an alternating series converges
- b. To determine if a geometric series converges
- c. To determine if a power series converges
- d. To determine if a series is telescoping

Answer: a

Which of the following series converges conditionally?

- a. $\sum_{n=1}^{\infty} \frac{(-1)^n}{n}$
- b. $\sum_{n=1}^{\infty} \frac{1}{n}$
- c. $\sum_{n=1}^{\infty} \frac{(-1)^n}{(2n+1)}$
- d. $\sum_{n=1}^{\infty} \frac{(-1)^n}{(n^2+1)}$

Answer: d

Which of the following statements about a conditionally convergent series is true?

- a. The series diverges.
- b. The series converges absolutely.

- c. The series converges conditionally.
- d. The series converges but is not alternating.

Answer: c

Which of the following series is conditionally convergent?

- a. $\sum_{n=1}^{\infty} (-1)^n/n^2$
- b. $\sum_{n=1}^{\infty} (-1)^n/(2n+1)$
- c. $\sum_{n=1}^{\infty} 1/2^n$
- d. $\sum_{n=1}^{\infty} n/(n+1)$

Answer: b

If a series is conditionally convergent, which of the following must be true?

- a. The series is alternating.
- b. The series is divergent.
- c. The series converges absolutely.
- d. The series does not converge.

Answer: a

Which of the following is an example of a conditionally convergent series?

- a. $\sum_{n=1}^{\infty} 1/n^2$
- b. $\sum_{n=1}^{\infty} (-1)^n/n$
- c. $\sum_{n=1}^{\infty} n!$
- d. $\sum_{n=1}^{\infty} (2n)!$

Answer: b

Which of the following tests can be used to test for conditional convergence?

- a. Integral test
- b. Ratio test
- c. Comparison test

d. Alternating series test

Answer: d

Which of the following statements is true about a convergent alternating series?

- a. The series converges absolutely.
- b. The series converges conditionally.
- c. The series is divergent.
- d. The series is not alternating.

Answer: b

Which of the following is an example of an alternating series that converges conditionally?

- a. $\sum_{n=1}^{\infty} 1/n^2$
- b. $\sum_{n=1}^{\infty} (-1)^n/(2n+1)$
- c. $\sum_{n=1}^{\infty} (-1)^n/(n^2+1)$

d. $\sum_{n=1}^{\infty} n/(n+1)$

Answer: c