# 42 Lecture - MTH101

## **Important Mcqs**

#### Which of the following tests can be used to determine if an infinite series converges or diverges?

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

Answer: d) All of the above

#### Which of the following series is divergent?

- a)  $1 + 1/2 + 1/4 + 1/8 + \dots$
- b)  $1 + 1/3 + 1/5 + 1/7 + \dots$
- c)  $1/2 + 1/4 + 1/6 + 1/8 + \dots$
- d) 1 1/2 + 1/3 1/4 + ...

Answer: a) 1 + 1/2 + 1/4 + 1/8 + ...

Which of the following tests should be used to determine the convergence of a series with only positive terms?

- a) Integral test
- b) Ratio test
- c) Alternating series test
- d) Divergence test

Answer: b) Ratio test

#### Which of the following series is convergent?

a)  $1 - \frac{1}{2} + \frac{1}{4} - \frac{1}{8} + \dots$ 

b)  $1 + 1/2 + 1/3 + 1/4 + \dots$ 

c)  $1 + \frac{1}{4} + \frac{1}{16} + \frac{1}{64} + \dots$ 

d)  $1/2 + 1/3 + 1/4 + 1/5 + \dots$ 

Answer: a) 1 - 1/2 + 1/4 - 1/8 + ...

#### What is the nth-term test for divergence?

- a) The series diverges if the limit of the nth term as n approaches infinity is zero.
- b) The series converges if the limit of the nth term as n approaches infinity is zero.
- c) The test can only be used for series with alternating terms.
- d) The test can only be used for series with positive terms.

Answer: a) The series diverges if the limit of the nth term as n approaches infinity is zero.

#### Which of the following tests can be used to determine the convergence of an alternating series?

- a) Divergence test
- b) Ratio test
- c) Integral test
- d) Alternating series test

Answer: d) Alternating series test

#### Which of the following series is divergent?

- a) 1 1/3 + 1/5 1/7 + ...
- b)  $1 + 2 + 3 + 4 + \dots$
- c) 1/2 + 1/3 + 1/5 + 1/7 + ...
- d)  $1/2 + 1/4 + 1/8 + 1/16 + \dots$

Answer: b) 1 + 2 + 3 + 4 + ...

# Which of the following tests should be used to determine the convergence of a series with alternating signs and decreasing absolute values?

- a) Divergence test
- b) Ratio test

- c) Integral test
- d) Alternating series test

Answer: d) Alternating series test

### Which of the following tests can be used to determine if a series is absolutely convergent?

- a) Ratio test
- b) Alternating series test
- c) Integral test
- d) Divergence test

Answer: c) Integral test

### Which of the following series is divergent?

- a) 1/ln(n)
- b) 1/n^2
- c) 1/n!
- d) 1/2^n

Answer: d) 1/