

# 45 Lecture - MTH101

## Important Mcqs

What is the Maclaurin series for  $f(x) = e^x$ ?

- A.  $1 + x + x^2/2! + x^3/3! + \dots$
- B.  $1 + x + x^2/2! + x^3/3! + \dots + x^n/n! + \dots$
- C.  $1 + x + x^2/2! + x^3/3! + \dots + x^n/n! + \dots + x^{?}/?!$
- D. None of the above

Answer: A

What is the Taylor series for  $f(x) = \sin(x)$  centered at  $x = 0$ ?

- A.  $x - x^3/3! + x^5/5! - x^7/7! + \dots$
- B.  $x + x^3/3! + x^5/5! + x^7/7! + \dots$
- C.  $1 + x + x^2/2! + x^3/3! + \dots + x^n/n! + \dots$
- D. None of the above

Answer: A

What is the Taylor series for  $f(x) = \ln(x)$  centered at  $x = 1$ ?

- A.  $(x - 1) - (x - 1)^2/2 + (x - 1)^3/3 - (x - 1)^4/4 + \dots$
- B.  $(x - 1) + (x - 1)^2/2 - (x - 1)^3/3 + (x - 1)^4/4 - \dots$
- C.  $1 + x + x^2/2! + x^3/3! + \dots + x^n/n! + \dots$
- D. None of the above

Answer: B

**What is the Maclaurin series for  $f(x) = \cos(x)$ ?**

- A.  $1 - x^2/2! + x^4/4! - x^6/6! + \dots$
- B.  $1 - x^2/2! + x^4/4! - x^6/6! + \dots + x^n/n! - \dots$
- C.  $x - x^3/3! + x^5/5! - x^7/7! + \dots$
- D. None of the above

**Answer: A**

**What is the Taylor series for  $f(x) = \sqrt{x}$  centered at  $x = 4$ ?**

- A.  $2 - (x - 4)/4 + (x - 4)^2/32 - (x - 4)^3/256 + \dots$
- B.  $2 + (x - 4)/4 - (x - 4)^2/32 + (x - 4)^3/256 + \dots$
- C.  $1 + x + x^2/2! + x^3/3! + \dots + x^n/n! + \dots$
- D. None of the above

**Answer: A**

**Which test can be used to determine if a Taylor series converges?**

- A. Ratio test
- B. Root test
- C. Comparison test
- D. Alternating series test

**Answer: B**

**What is the interval of convergence for the Maclaurin series of  $f(x) = 1/(1+x)$ ?**

- A.  $(-1, 1)$
- B.  $(-1, 1]$
- C.  $[-1, 1)$
- D.  $[-1, 1]$

Answer: D

What is the interval of convergence for the Taylor series of  $f(x) = e^x$  centered at  $x = 3$ ?

A.  $(-?, ?)$

B.  $(-3,$