

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. $(-\infty, \infty)$

B. $(-3, 3)$