

23 Lecture - MTH101

Important Mcqs

Which of the following is true about the maximum or minimum value of a function?

- A) It always occurs at a critical point of the function
- B) It always occurs at the endpoints of the interval
- C) It can occur at either a critical point or an endpoint of the interval
- D) It can occur anywhere on the function

Answer: C) It can occur at either a critical point or an endpoint of the interval

How can we determine whether a critical point corresponds to a maximum or minimum value of a function?

- A) By evaluating the function at the critical point
- B) By taking the derivative of the function at the critical point
- C) By taking the second derivative of the function at the critical point
- D) By using the intermediate value theorem

Answer: C) By taking the second derivative of the function at the critical point

What is the absolute maximum of a function?

- A) The highest point of the function over its entire domain
- B) The highest point of the function within a given interval
- C) The lowest point of the function over its entire domain
- D) The lowest point of the function within a given interval

Answer: A) The highest point of the function over its entire domain

What is the absolute minimum of a function?

- A) The highest point of the function over its entire domain
- B) The highest point of the function within a given interval

- C) The lowest point of the function over its entire domain
- D) The lowest point of the function within a given interval

Answer: C) The lowest point of the function over its entire domain

What is an inflection point of a function?

- A) A point where the derivative of the function is zero
- B) A point where the second derivative of the function is zero
- C) A point where the function changes concavity
- D) A point where the function changes direction

Answer: C) A point where the function changes concavity

Which of the following is not a step in solving an optimization problem?

- A) Taking the derivative of the function
- B) Setting the derivative equal to zero or undefined
- C) Checking the endpoints of the interval
- D) Evaluating the function at the critical points

Answer: D) Evaluating the function at the critical points

What is a constraint in an optimization problem?

- A) A condition that must be satisfied by the function
- B) A condition that must be satisfied by the derivative of the function
- C) A condition that must be satisfied by the second derivative of the function
- D) A condition that must be satisfied by the endpoints of the interval

Answer: A) A condition that must be satisfied by the function

Which of the following is not true about the maximum or minimum value of a function over a closed interval?

- A) It may occur at the endpoints of the interval
- B) It may occur at the critical points of the function

- C) It may occur at points where the derivative is undefined
- D) It may occur at points where the function is not continuous

Answer: D) It may occur at points where the function is not continuous

What is the first derivative test used for?

- A) To determine whether a critical point corresponds to a maximum or minimum of a function
- B) To determine whether a function is increasing or decreasing
- C) To determine whether a function is concave up or concave down
- D) To determine whether a function has an inflection point

Answer: B) To determine whether a function is increasing or decreasing

Which of the following is true about the second derivative test?

- A) It is used to determine whether a function is increasing or decreasing
- B) It is used to