Edulyte

CHAIN RULE

The chain rule is an essential aspect of mathematics. With the help of the chain rule, we can differentiate composite functions in the field. The chain rule mandates that the derivative of a composite function is equal in measure to the derivative of the outer function that is gauged at the inner function and multiplied by the derivative of the inner function. In mathematical terms, we can denote the chain rule as f(g(x)) = f'(g(x)). The process of chain rule differentiation comes in handy while solving different problems in various interrelated fields like physics, engineering, architecture, and more.

Read more

Q1: What is the derivative of ln(5x) with respect to x using the chain rule?

A: (5/x)
B: (5/x)ln(5x)
C: 5
D: (5/ln(5x))

Q2: Which of the following functions cannot be differentiated using the chain rule?

A: f(x) = x² + 3x + 2
B: f(x) = e^(2x)
C: f(x) = |x|
D: f(x) = √(3x + 1)

Q3: If f(u) = u³ and u = 2x - 1, what is the derivative of f(x) with respect to x using the chain rule?

A: 3(2x - 1)²
B: 3(2x - 1)³
C: 6x - 3
D: 6x² - 3

Q4: Chain rule is used in:

A: Trigonometric functions
B: Exponential function
C: Logarithmic functions
D: All of the above

Q5: The chain rule is extended to higher-order derivatives by applying it:

A: Repetitively
B: Seldom
C: Randomly
D: None of the above

Q6: Chain rule is used in which of the following real-life applications?

A: Engineering
B: Physics
C: Economics
D: All of the above

Q7: What is the role of partial derivatives?

A: They help us know why a function does not change according to a variable while keeping other variables constant or fixed.
B: They help us know how a function remains the same according to a variable while keeping other variables constant or fixed.
C: They help us know how a function changes according to a variable while keeping other variables constant or fixed.
D: They help us know how a variable changes according to a function while keeping other functions non-fixed.

Q8: What should one do to not commit mistakes while employing the chain rule?

A: Do not forget to add the derivative of the inner function.
B: Do not forget to multiply by the derivative of the inner function.
C: Do not forget to divide the derivative of the inner function.
D: Do not forget to subtract the derivative of the inner function.

Q9: What should one do to not commit mistakes while employing the chain rule?

A: Do not mistake inner functions for outer functions.
B: Use inner functions and outer functions interchangeably.
C: Use inner functions in place of outer functions.
D: None of the above

Q10: How can you avoid mistakes while employing the chain rule?

A: By always using the inner and outer functions interchangeably.
B: By never differentiating between the inner and outer functions.
C: By always differentiating between the inner and outer functions.
D: All of the above

Answers

Q1: A - (5/x)

Q2: C - f(x) = |x|

Q3: C - 6x - 3

Q4: D - All of the above

Q5: A - Repetitively

Q6: D - All of the above

Q7: C - They help us know how a function changes according to a variable while keeping other variables constant or fixed.

Q8: B - Do not forget to multiply by the derivative of the inner function.

Q9: A - Do not mistake inner functions for outer functions.

Q10: C - By always differentiating between the inner and outer functions.