Edulyte

APPLICATION OF DERIVATIVES

Derivatives are a crucial part of a stream of mathematics known as calculus. They determine the rate or trend at which functions fluctuate and give us essential knowledge about their typical behaviour. This mathematical concept has been used not just in the field of numbers but comes in handy in various real-life fields like economics, biology, engineering, and more.

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Q1: The derivative of a constant function is

A: 0
B: 1
C: The constant itself
D: Undefined

Q2: What is the derivative of e^x?

A: e^x
B: ln(x)
C: 1/x
D: 0

Q3: What is the derivative of a constant multiplied by a function, k * f(x)?

A: k * ∫f(x) dx
B: ∫k * f(x) dx
C: k * f(x)
D: k

Q4: What does the derivative of a function represent?

A: The area under the curve
B: The rate of change of function
C: The integral of the function
D: The function's maximum value

Q5: Which rule is used to differentiate a product of two functions?

A: Sum rule
B: Chain rule
C: Power rule
D: Quotient rule

Q6: What does the derivative of the profit function indicate in economics?

A: Total cost of production
B: Average profit
C: Maximum profit
D: Rate of change of production concerning the units sold

Q7: When are derivatives not applicable in real-world scenarios?

A: When analysing motion
B: When dealing with exponential growth
C: When calculating the area under a curve
D: At points of discontinuity in functions

Q8: What does the second derivative of a position function represent in physics?

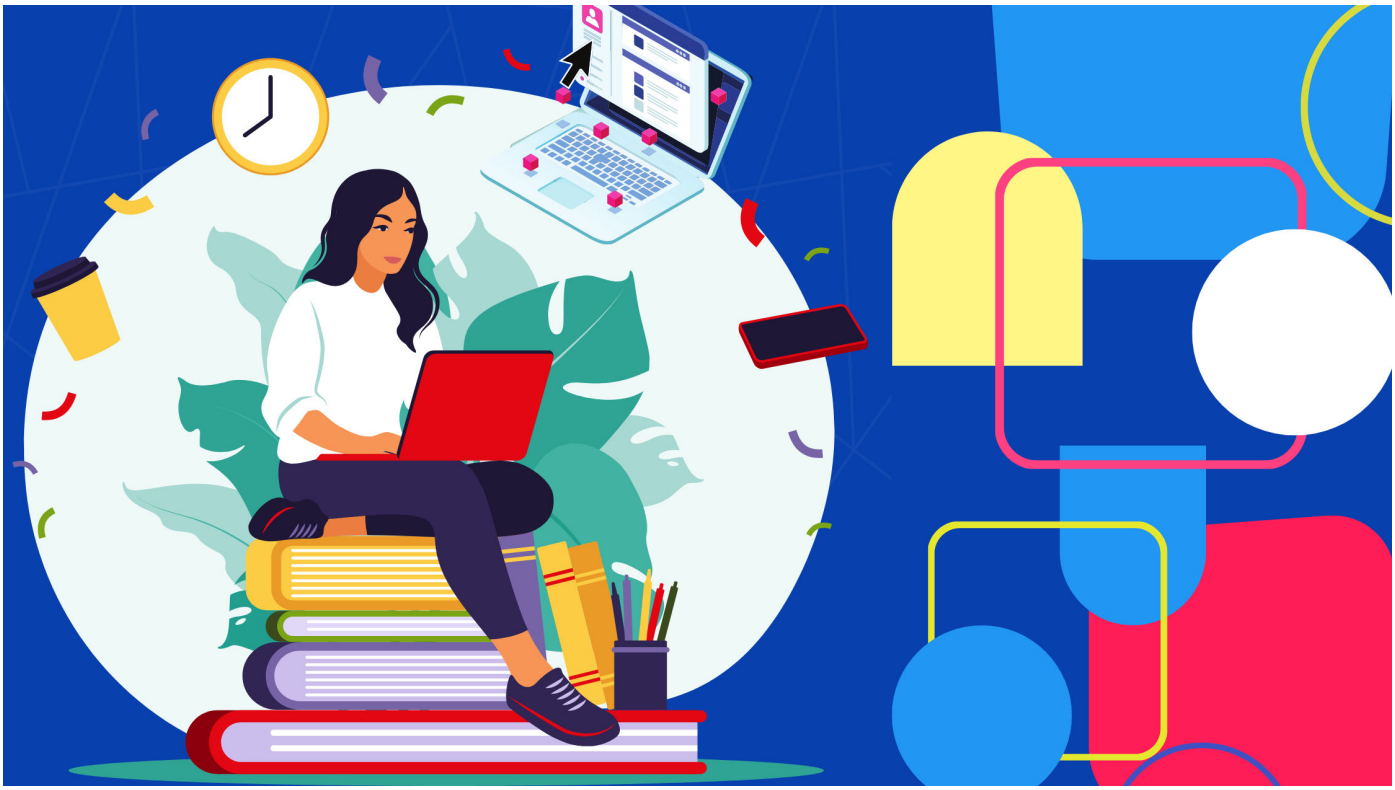
A: Velocity
B: Displacement
C: Acceleration
D: Time

Q9: How do engineers use derivatives to optimise designs?

A: By finding the integral of the design function
B: By locating the minimum points of the design function using derivatives
C: By applying the chain rule to the design function
D: By calculating the average value of the design function

Q10: In biology, derivatives are used to

A: Study population dynamics
B: Predict the future motion of an object
C: Calculate instantaneous velocity and acceleration
D: Know how to model financial markets



Answers

Q1: A - 0

Q2: A - e^x

Q3: C - k * f(x)

Q4: B - The rate of change of function

Q5: B - Chain rule

Q6: D - Rate of change of production concerning the units sold

Q7: D - At points of discontinuity in functions

Q8: C - Acceleration

Q9: B - By locating the minimum points of the design function using derivatives

Q10: A - Study population dynamics