

14 Lecture - MTH101

Important Mcqs

What is the derivative of a function?

- a) The instantaneous rate of change of a function at a specific point
- b) The average rate of change of a function over an interval
- c) The slope of the tangent line at a specific point
- d) Both a and c

Solution: d) Both a and c

What is the equation of a tangent line at a specific point?

- a) $y = mx + b$
- b) $y = f(x) + b$
- c) $y - y_1 = m(x - x_1)$
- d) None of the above

Solution: c) $y - y_1 = m(x - x_1)$, where m is the slope of the tangent line and (x_1, y_1) is the point of tangency.

What is the instantaneous rate of change of a function?

- a) The slope of the tangent line at a specific point
- b) The average rate of change of a function over an interval
- c) The maximum rate of change of a function
- d) None of the above

Solution: a) The slope of the tangent line at a specific point.

What is the relationship between the slope of the tangent line and the slope of the curve at a specific point?

- a) The slope of the tangent line is greater than the slope of the curve
- b) The slope of the tangent line is less than the slope of the curve

- c) The slope of the tangent line is equal to the slope of the curve
- d) There is no relationship between the two slopes

Solution: c) The slope of the tangent line is equal to the slope of the curve at a specific point.

What is the average rate of change of a function over an interval?

- a) The difference in the function values at the endpoints of the interval
- b) The difference in the independent variable values at the endpoints of the interval
- c) The difference in the function values divided by the difference in the independent variable values
- d) None of the above

Solution: c) The difference in the function values divided by the difference in the independent variable values.

What is the derivative of a constant function?

- a) 0
- b) 1
- c) The constant itself
- d) None of the above

Solution: a) 0, as the slope of a constant function is always 0.

What is the relationship between the derivative of a function and the slope of the tangent line?

- a) The derivative of a function is the slope of the tangent line
- b) The slope of the tangent line is the integral of the function
- c) The derivative of a function is the average rate of change over an interval
- d) None of the above

Solution: a) The derivative of a function is the slope of the tangent line at a specific point.

What is the relationship between the derivative of a function and the rate of change of the function?

- a) The derivative of a function is the average rate of change over an interval
- b) The derivative of a function is the instantaneous rate of change at a specific point

c) The derivative of a function is not related to the rate of change of the function

d) None of the above

Solution: b) The derivative of a function is the instantaneous rate of change at a specific point.

What is the derivative of $f(x) = x^2$?

a) $f'(x) = 2x$

b) $f'(x) = x^2$

c) $f'(x) = 1/x$

d) None of the above

Solution: a) $f'(x) = 2x$, as the derivative of x^2 is $2x$.