## 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) $y=m x+b$
b) $y=f(x)+b$
c) $y-y 1=m(x-x 1)$
d) None of the above

Solution: c$) \mathrm{y}-\mathrm{y} 1=\mathrm{m}(\mathrm{x}-\mathrm{x} 1)$, where m is the slope of the tangent line and $(\mathrm{x} 1, \mathrm{y} 1)$ 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 $f(x)=x^{\wedge} \mathbf{2}$ ?
a) $\mathrm{f}^{\prime}(\mathrm{x})=2 \mathrm{x}$
b) $f^{\prime}(x)=x^{\wedge} 2$
c) $f^{\prime}(x)=1 / x$
d) None of the above

Solution: a) $f^{\prime}(x)=2 x$, as the derivative of $x^{\wedge} 2$ is $2 x$.

