## 16 Lecture - MTH101

## Important Subjective

## What is the power rule of differentiation?

Answer: The power rule states that the derivative of a function of the form $f(x)=x^{\wedge} n$ is given by $f^{\prime}(x)=$ $n x^{\wedge}(n-1)$.

How is the product rule used to find the derivative of a product of two functions?
Answer: The product rule states that if $\mathrm{f}(\mathrm{x})$ and $\mathrm{g}(\mathrm{x})$ are two functions, then the derivative of their product is given by the formula $f^{\prime}(x) g(x)+f(x) g^{\prime}(x)$.

## What is the chain rule used for in differentiation?

Answer: The chain rule is used to find the derivative of a composite function.

How is the quotient rule used to find the derivative of a quotient of two functions?
Answer: The quotient rule states that if $f(x)$ and $g(x)$ are two functions, then the derivative of their quotient $f(x) / g(x)$ is given by the formula $\left(f^{\prime}(x) g(x)-f(x) g^{\prime}(x)\right) /(g(x))^{\wedge} 2$.

How are trigonometric identities used to simplify the derivatives of trigonometric functions?
Answer: Trigonometric identities can be used to simplify the derivatives of trigonometric functions and make them easier to compute.

What is logarithmic differentiation used for?
Answer: Logarithmic differentiation is a technique used to find the derivative of a function that is difficult to differentiate using other methods.

How is implicit differentiation used to find the derivative of an implicitly defined function?
Answer: Implicit differentiation is used to find the derivative of a function that is defined implicitly by an equation.

## What is the difference between explicit and implicit differentiation?

Answer: Explicit differentiation is used to find the derivative of a function that is defined explicitly in terms of its independent variable, while implicit differentiation is used to find the derivative of a function that is defined implicitly by an equation.

What is the derivative of a constant function?
Answer: The derivative of a constant function is 0 .

What is the derivative of the natural logarithm function?
Answer: The derivative of the natural logarithm function $f(x)=\ln (x)$ is given by $f^{\prime}(x)=1 / x$.

