AP Calculus Flashcards PDF

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What is the definition of a derivative?

The derivative of a function at a point is the limit of the average rate of change of the function as the interval approaches zero.

What is the power rule for differentiation?

If $f(x) = x^n$, then $f'(x) = n \cdot x^{n-1}$.

What is the product rule for differentiation?

If $u(x)$ and $v(x)$ are functions, then the derivative of their product is $(u \cdot v)' = u'v + uv'$.

What is the quotient rule for differentiation?

If $u(x)$ and $v(x)$ are functions, then the derivative of their quotient is $(u/v)' = (u'v - uv')/v^2$.

What is the chain rule for differentiation?

If $y = f(g(x))$, then the derivative is $dy/dx = f'(g(x)) \cdot g'(x)$.

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What is the Fundamental Theorem of Calculus?

The Fundamental Theorem of Calculus states that if F is an antiderivative of f on an interval [a, b], then $\int_a^b f(x)dx = F(b) - F(a)$.

What is the limit definition of a derivative?

The limit definition of a derivative is $f'(x) = \lim_{h \to 0} [(f(x+h) - f(x))/h]$.

What is L'Hôpital's Rule?

L'Hôpital's Rule states that if the limit of f(x)/g(x) results in an indeterminate form (0/0 or ∞/∞), then $\lim_{x \to c} f(x)/g(x) = \lim_{x \to c} f'(x)/g'(x)$, provided the limit on the right exists.

What is the difference between a definite and an indefinite integral?

A definite integral has specific limits and results in a number, while an indefinite integral represents a family of functions and includes a constant of integration.

What is the area under a curve?

The area under a curve can be found using definite integrals, which calculate the accumulation of the function's values over a specified interval.

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