calculus of a single variable

#single variable calculus #differential calculus #integral calculus #limits and continuity #derivatives and integrals

Explore the foundational principles of single variable calculus, a cornerstone of higher mathematics. This field meticulously examines the behavior of functions with one independent variable, delving into essential concepts like limits, continuity, differentiation, and integration. It provides the mathematical tools necessary to understand rates of change, accumulation, and optimization, crucial for various scientific and engineering disciplines.

calculus of a single variable

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Slope
Example
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Integration
The Derivative
A Tangent Line
Find the Maximum Point
Negative Slope
The Derivative To Determine the Maximum of this Parabola
Find the First Derivative of this Function
The First Derivative
Find the First Derivative
Calculus made EASY! 5 Concepts you MUST KNOW before taking calculus! - Calculus made EASY! 5 Concepts you MUST KNOW before taking calculus! by Dr Ji Tutoring 424,599 views 1 year ago 23 minutes - CORRECTION - At 22:35 of the video the exponent of 1/2 should be negative once we moved it up! Be sure to check out this video ...
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Find the Area of this Circle
Example on How We Find Area and Volume in Calculus
Calculus What Makes Calculus More Complicated
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Elimination Process
Introduction to Equations
Finding Solutions
Solution 1
Rank of the Matrix
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The Gradient of a Tangent
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write the taylor series for the following function f of x
find the taylor series for this polynomial
figuring out derivatives of f at 0
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How To Evaluate Limits Graphically
Evaluate the Limit
Limit as X Approaches Negative Two from the Left
Vertical Asymptote
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P-test with Confidence Interval
Graphing Quadratic
Making Isosceles Triangle Given Two Lines
Solving Single-Variable Equation
Making Isosceles Triangle Given Two Lines 2
Real Analysis Studying
Simplifying Power of Complex Number
Derivative Quotient Rule
Derivative with arccos
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Limits
Limit Expression
Derivatives
Tangent Lines
Slope of Tangent Lines
Integration
Derivatives vs Integration
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Limit Laws
The Squeeze Theorem
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When the Limit of the Denominator is 0
[Corequisite] Lines: Graphs and Equations
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Limits at Infinity and Graphs
Limits at Infinity and Algebraic Tricks
Continuity at a Point
Continuity on Intervals
Intermediate Value Theorem
[Corequisite] Right Angle Trigonometry
[Corequisite] Sine and Cosine of Special Angles
[Corequisite] Unit Circle Definition of Sine and Cosine
[Corequisite] Properties of Trig Functions
[Corequisite] Graphs of Sine and Cosine
[Corequisite] Graphs of Sinusoidal Functions
[Corequisite] Graphs of Tan, Sec, Cot, Csc
[Corequisite] Solving Basic Trig Equations
Derivatives and Tangent Lines
Computing Derivatives from the Definition
Interpreting Derivatives
Derivatives as Functions and Graphs of Derivatives
Proof that Differentiable Functions are Continuous
Power Rule and Other Rules for Derivatives
[Corequisite] Trig Identities
[Corequisite] Pythagorean Identities
[Corequisite] Angle Sum and Difference Formulas
[Corequisite] Double Angle Formulas
Higher Order Derivatives and Notation
Derivative of e^x
Proof of the Power Rule and Other Derivative Rules
Product Rule and Quotient Rule
Proof of Product Rule and Quotient Rule
Special Trigonometric Limits
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[Corequisite] Solving Rational Equations
Derivatives of Trig Functions
Proof of Trigonometric Limits and Derivatives
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Marginal Cost
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[Corequisite] Combining Logs and Exponents
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The Chain Rule
More Chain Rule Examples and Justification
Justification of the Chain Rule
Implicit Differentiation
Derivatives of Exponential Functions
Derivatives of Log Functions
Logarithmic Differentiation

[Corequisite] Inverse Functions
Inverse Trig Functions
Derivatives of Inverse Trigonometric Functions
Related Rates - Distances
Related Rates - Volume and Flow
Related Rates - Angle and Rotation
[Corequisite] Solving Right Triangles
Maximums and Minimums
First Derivative Test and Second Derivative Test
Extreme Value Examples
Mean Value Theorem
Proof of Mean Value Theorem
Derivatives and the Shape of the Graph
Linear Approximation
The Differential
L'Hospital's Rule
L'Hospital's Rule on Other Indeterminate Forms
Newtons Method
Antiderivatives
Finding Antiderivatives Using Initial Conditions
Any Two Antiderivatives Differ by a Constant
Summation Notation
Approximating Area
The Fundamental Theorem of Calculus, Part 1
The Fundamental Theorem of Calculus, Part 2
Proof of the Fundamental Theorem of Calculus
The Substitution Method
Why U-Substitution Works
Average Value of a Function
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