Differential Calculus
6 UNITS · 117 SKILLS

UNIT 1
Limits and continuity

UNIT 2
Derivatives: definition and basic rules

UNIT 3
Derivatives: chain rule and other advanced topics

UNIT 4
Applications of derivatives

UNIT 5
Analyzing functions

UNIT 6
Parametric equations, polar coordinates, and vector-valued functions

COURSE CHALLENGE
Test your knowledge of the skills in this course.

Unit 1: Limits and continuity

Unit mastery: 75% | **2,610** / 3,500 mastery points

Mastered Proficient Familiar Attempted Not started Quiz Unit test

About this unit

Limits describe the behavior of a function as we approach a certain input value, regardless of the function's actual value there. Continuity requires that the behavior of a function around a point matches the function's value at that point. These simple yet powerful ideas play a major role in all of calculus.

Limits intro

Recommended

Learn

Limits intro

Limits intro

Practice

Limits intro
Proficient

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Unit 2: Derivatives: definition and basic rules

Unit mastery: 76% | **1,890** / 2,500 mastery points

Mastered Proficient Familiar Attempted Not started Quiz Unit test

About this unit

The derivative of a function describes the function's instantaneous rate of change at a certain point. Another common interpretation is that the derivative gives us the slope of the line tangent to the function's graph at that point. Learn how we define the derivative using limits. Learn about a bunch of very useful rules (like the power, product, and quotient rules) that help us find derivatives quickly.

Average vs. instantaneous rate of change

Recommended

Learn

- Newton, Leibniz, and Usain Bolt
- Derivative as a concept

Practice

Secant lines & average rate of change
Proficient