Unit 13:Introduction to Calculus

Content Area: **Mathematics**
Course(s): **Generic Course**
Time Period: **Semester 2**
Length: **3 weeks**
Status: **Published**

Standards - NJCCS/CCSS

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.F-IF.C.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.
MA.F-IF.C.7b	Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.

Enduring Understandings

A limit is an approach, not just a substitution. It allows you to describe the behavior of a function where it is otherwise undefined.

The derivative represents an instantaneous rate of change and provides a tool to measure how one variable changes with respect to another.

Essential Questions

Why is calculus more powerful than previous math studied?

How do you find the limit of a function?

When does a limit fail to exist?

How do you determine continuity of a function?

How do you find a one sided limit?

What is a derivative?

How can we find the minimum or maximum of a function by analyzing the slope?

Knowledge and Skills

- Find the limit of a function graphically and algebraically
- Calculate the derivative of a function.
- Use the derivative of a function to find the rate of change
- Use the product rule and quotient rule

Transfer Goals

Recognize and solve practical or theoretical problems involving mathematics, including those for which the solution approach is not obvious, by using mathematical reasoning and strategic thinking.

Recognize that a graph includes multiple facts at any given data point.

Resources

Precalculus: Graphical, Numerical, Algebraic 10th Edition

Desmos/Amplify

Problem-Attic

Deltamath

Geogebra