

UNIT 1 : Functions, Graphs, and Limits

Target 1A: Find the limits of functions graphically, numerically, and analytically

Target 1B: Understand the continuity of a function

Target 1C: Discuss one-sided limits

Target 1D: Use limits to find limits at infinity and infinite limits

UNIT 2: Differentiation

Target 2A: Use and apply the definition of the derivative

Target 2B: Understand basic rules of differentiation, including trig, logarithmic, and exponential functions

Target 2C: Apply the product, quotient, and chain rules to differentiate functions.

Target 2D: Make connections between position, velocity, and acceleration

Target 2E: Understand the difference between instantaneous and average rate of change.

Target 2F: Apply rules of differentiation to implicit equations.

UNIT 3: Applications of Derivatives

Target 3A: Understand the Extreme and Mean Value Theorems

Target 3B: Determine extrema and increasing/decreasing behavior of a function

Target 3C: Use the 2nd derivative test to determine extrema

Target 3D: Use the 2nd derivative to determine concavity

Target 3E: Solve optimization problems

Target 3F: Calculate linear approximations

Target 3G: Solve related rate problems

UNIT 4: Definite Integrals

Target 4A: Calculate areas using the rectangular approximation methods.

Target 4B: Use Riemann Sums with uneven subintervals.

Target 4C: Use the definite integral as a limit of Riemann Sums.

Target 4D: Use technology to calculate the definite integral.

Semester 1 Ends

UNIT 4: Definite Integrals (continued)

Target 4E: Understand the Mean Value Theorem for Integrals and Average Value Theorem

Target 4F: Understand basic rules of antidifferentiation, including trig, logarithmic, and exponential functions

Target 4G: Apply the technique of substitution to antidifferentiate functions

Target 4H: Use the Fundamental Theorem of Calculus to find the derivative of an integral

Target 4I: Use the definite integral as a limit of Trapezoid Sums

Unit 5: Differential Equations & Mathematical Modeling

Target 5A: Construct and analyze slope fields

Target 5B: Solve separable differential equations

Target 5C: Apply differential equations to real-life problems

Unit 6: Applications of Definite Integrals

Target 6A: Determine the area between curves and the area enclosed by intersecting curves with respect to x

Target 6B: Determine the area between curves and the area enclosed by intersecting curves with respect to y

Target 6C: Calculate the volume of a solid using Disk and Washer Method

Target 6D: Calculate the volume of a solid using Cross Sections

Semester 2 Ends