Acc Calculus Unit 5 Integration

Content Area: **Math**
Course(s): **Accelerated Calculus**
Time Period: **Marking Period 3**
Length: **8 weeks**
Status: **Published**

Unit Overview

In this unit, students will learn the connection between integration and differentiation. Students will learn how to evaluate relatively simple integrals through antidifferentiation, and move on to various methods of integration used to evaluate more difficult integrals.

Enduring Understandings

- Antidifferentiation is the inverse process of differentiation.
- The definite integral of a function over an interval is the limit of a Riemann sum over that interval and can be calculated using a variety of strategies.
- The Fundamental Theorem of Calculus, which has two distinct formulations, connects differentiation and integration.
- The definite integral of a function over an interval is a mathematical tool with many interpretations and applications involving accumulation.

Essential Questions

- What are antiderivatives and how are they used?
- How can you approximate the area of a plane region?
- How are Riemann sums similar to the trapezoidal rule and how are they different?
- What is the fundamental theorem of calculus?
- How do you integrate composite functions?
- How do you integrate rational functions and trig functions other than sine or cosine?
- How can you recognize when an integral results in an inverse trigonometric function?

New Jersey Student Learning Standards (No CCS)

N/A

Interdisciplinary Connections

LA.W.9-10.6	Use technology, including the Internet, to produce, share, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.
SCI.HS-ETS1-2	Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
TECH.8.1.12.C.CS4	Contribute to project teams to produce original works or solve problems.

Technology Standards

TECH.8.1.12.C.CS4	Contribute to project teams to produce original works or solve problems.
TECH.8.1.12.D.CS3	Exhibit leadership for digital citizenship.
TECH.8.1.12.E.CS4	Process data and report results.
TECH.8.1.12.F.CS3	Collect and analyze data to identify solutions and/or make informed decisions.
TECH.8.1.12.F.CS4	Use multiple processes and diverse perspectives to explore alternative solutions.
TECH.8.2.12.C.CS2	The application of engineering design.

21st Century Themes/Careers

CAEP.9.2.12.C.3	Identify transferable career skills and design alternate career plans.

Financial Literacy Integration

PFL.9.1.12.C.1	Compare and contrast the financial benefits of different products and services offered by a variety of financial institutions.
PFL.9.1.12.C.2	Compare and compute interest and compound interest and develop an amortization table using business tools.
PFL.9.1.12.C.3	Compute and assess the accumulating effect of interest paid over time when using a variety of sources of credit.