West Windsor-Plainsboro Regional School District
Calculus Honors
Revised June 2020

Unit 1: Limits	
Content Area: Mathematics	
Course & Grade Level: Calculus Honors, 11-12	
Summary and Rationale	

Essentially, the study of calculus is the study of limits. Limits allow us to think about what happens as we "approach the infinite", and as we approach the infinitesimally small. If we want to study how functions change with respect to the variation of a parameter (say, how a function f(x) changes when we change x by a little), then limits just fall naturally out of the description of that change. In this unit, students study this building block of Calculus by developing a formal definition of limits. This understanding will be utilized throughout the course.

Recommended Pacing

15 days

New Jersey Student Learning Standards for Mathematics

Standard: Standards for Math Practice

CPI #	Cumulative Progress Indicator (CPI)
1	Make sense of problems and persevere in solving them
2	Reason abstractly and quantitatively
3	Construct viable arguments and critique the reasoning of others
4	Model with Mathematics
5	Use appropriate tools strategically
6	Attend to precision
7	Look for and make use of structure
8	Look for and express regularity in repeated reasoning

New Jersey Student Learning Standards for English Language Arts
Companion Standards

Standard: Science Key Ideas and Details

CPI #	Cumulative Progress Indicator (CPI)
RST.9-10.3	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

Standard: Science Integration of Knowledge and Ideas

CPI #	Cumulative Progress Indicator (CPI)
RST.9-10.7	Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

New Jersey Student Learning Standards for Career Readiness, Life Literacies and Key Skills

Critical thinking and Problem Solving

CPI #	Cumulative Progress Indicator (CPI)
9.4.12.CT.2	Explain the potential benefits of collaborating to enhance critical thinking and problem solving.

Creativity and Innovation

CPI#	Cumulative Progress Indicator (CPI)

9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas.

Technology Literacy

CPI#	Cumulative Progress Indicator (CPI)
9.4.12.TL.3	Analyze the effectiveness of the process and quality of collaborative environments.

New Jersey Student Learning Standards for Technology	
CPI #	**Cumulative Progress Indicator (CPI)**
8.1	All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

Instructional Focus

Unit Enduring Understandings
- Limits are a tool for understanding the behavior of functions
- Limits help us determine continuity and slope

Unit Essential Questions
- What is a limit?
- Why are limits the building blocks of Calculus?

Content Understandings
- Calculus and how it compares with PreCalculus.
- The Tangent Line problem and Area are basic to calculus.
- Limits can be found by using numerical or graphical approaches.
- There is a formal definition of Limits.
- You can evaluate limits using properties of limits as well as algebraic techniques.
- There are properties of continuity.
- Infinite limits can be determined from the left and from the right.

Content Questions
- What is Calculus and how does it compare to Precalculus?
- What are ways a limit can fail to exist?
- How can the Squeeze Theorem be applied in Trigonometric Limits?
- How do you apply the Intermediate Value Theorem?
- How do you use vertical asymptotes to determine the infinite limit?

Objectives

Students will know:
- The formal and informal definition of a limit
- The definition of continuity

Students will be able to:
- Understand that the Tangent Line Problem and Area Problem are motivating problems for the development of the concepts of calculus
- Estimate limits graphically and numerically, and understand how limits can fail to exist
- Determine the limit of a function by evaluating limits using properties of limits, cancelation, and rationalization
- Determine continuity at a point and on an open interval
- Determine one-sided limits and continuity on a closed interval
- Understand and use the Intermediate Value Theorem
- Determine infinite limits and use them to find and sketch vertical asymptotes

Evidence of Learning
Assessment
Assessment plan may include teacher designed formative and summative assessments, a district common assessment, activity, and/or project and analysis of PSAT or SAT data.

Competencies for 21st Century Learners			
	Collaborative Team Member		Effective Communicator
	Globally Aware, Active, & Responsible Student/Citizen		Information Literate Researcher
	Innovative & Practical Problem Solver		Self-Directed Learner

Resources
Core Text: Calculus of a Single Variable, Eleventh Edition, Larson & Edwards **Suggested Resources:** Textbook, CalcChat, & CalcView

Unit 2: Derivatives

Content Area: Mathematics

Course & Grade Level: Calculus Honors, 11-12

Summary and Rationale

This unit builds the tangent line problem and introduces derivatives, first finding them using the difference quotient. As unit 2 progresses, more derivative rules are learned including the power rule, the product rule, the quotient rule, and the chain rule as well as implicit differentiation.

Recommended Pacing

24 days

New Jersey Student Learning Standards for Mathematics

Standard: Standards for Math Practice

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New Jersey Student Learning Standards for English Language Arts Companion Standards

Standard: Science Key Ideas and Details

CPI #	Cumulative Progress Indicator (CPI)
RST.9-10.3	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. Determine the meaning of symbols, key terms and phrases as they are used in specific scientific or technical content relevant to grades 9-10 texts and topics.

Standard: Science Craft and Structure

CPI#	Cumulative Progress Indicator (CPI)
RST.9-10.4	Determine the meaning of symbols, key terms and phrases as they are used in specific scientific or technical content relevant to grades 9-10 texts and topics.

New Jersey Student Learning Standards for Career Readiness, Life Literacies and Key Skills

Critical thinking and Problem Solving

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Technology Literacy

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8.1	All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

Instructional Focus

Unit Enduring Understandings
- The derivative measures the steepness of the graph of a function at some particular point on the graph. Thus, the derivative is slope.
- The derivative helps us understand change as related to the function.

Unit Essential Questions
- Why do we need to know the slope of a graph at any given point?
- What does the sign of the derivative tell us about the function?

Content Understandings
- The tangent line problem focuses on finding the slope of the tangent line using a variety of techniques.
- There is a relationship between differentiability and continuity.
- There are many derivative techniques in differentiation.
- You can use derivatives to find rates of change.
- There are higher-order derivatives.
- Related rates are used to solve real-life problems.

Content Questions
- How do you find the slope of a tangent line to the graph of a function at a given point?
- What is a derivative and how is it used?
- What is the Power Rule and when is it used?
- What is the Quotient Rule?
- What are the derivatives of the six basic trigonometric functions?
- What is the Chain Rule and how do you use it?
- Can you distinguish between functions written in implicit and explicit form?
- How do you apply implicit form?
- How do you apply related rates to solve real-life problems?

Objectives

Students will know:
- The rules of differentiation

Students will be able to:
- Understand the relationship between differentiability and continuity
- Find the slope of the tangent line to a curve at a point
- Use the limit definition to find the derivative
- Use fundamental differentiation rules to find the derivatives of functions and use those derivatives to find rates of change
- Find derivatives of the sine and cosine functions
- Find derivatives using Product Rule and Quotient Rule

- Find derivatives of other trig functions
- Find higher order derivatives
- Find derivatives using Chain Rule and General Power Rule
- Distinguish between implicit and explicit form, and use implicit differentiation to find derivatives
- Find and use related rates to solve real world problems

Evidence of Learning

Assessment

Assessment plan may include teacher designed formative and summative assessments, a district common assessment, activity, and/or project and analysis of PSAT or SAT data.

Competencies for 21st Century Learners

	Collaborative Team Member		Effective Communicator
	Globally Aware, Active, & Responsible Student/Citizen		Information Literate Researcher
	Innovative & Practical Problem Solver		Self-Directed Learner

Resources

Core Text: Calculus of a Single Variable, Eleventh Edition, Larson & Edwards
Suggested Resources: Textbook, CalcChat, & CalcView

Unit 3: Applications of Derivatives

Content Area: Mathematics

Course & Grade Level: Calculus Honors, 11-12

Summary and Rationale

This unit focuses on the extrema of a function, using the first and second derivative tests and the mean value theorem. As Unit 3 progresses, curve sketching is introduced using increasing and decreasing intervals and concavity. Unit 3 culminates with real life applications in the form of optimization.

Recommended Pacing

27 days

New Jersey Student Learning Standards for Mathematics

Standard: Standards for Mathematical Practice

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New Jersey Student Learning Standards for English Language Arts Companion Standards

Standard: Science key ideas and details

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Technology Literacy

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New Jersey Student Learning Standards for Technology

CPI #	Cumulative Progress Indicator (CPI)

8.1	All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

Interdisciplinary Standards Science	
HS-PS3-1	Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.

Instructional Focus

Unit Enduring Understandings
- We use the derivative to determine the maximum and minimum values of particular functions
- Derivatives are met in many engineering, physics and business problems

Unit Essential Questions
- When is knowing the maximum or minimum value of a function useful for decision making?
- How does the derivative of a function help us determine information regarding real-life phenomena?
- What is optimization and how is it used?

Content Understandings
- Derivatives can be used to figure out both the extrema and relative extrema of a function on an interval.
- You can use the First Derivative Test to find the relative extrema of a function as well as where the function is increasing or decreasing.
- You can use the Second Derivative Test to find where a function is concave upward, concave downward, and points of inflection.
- You can use infinite limits along with finding the relative extrema and concavity to graph rational functions.
- Minimum and maximum problems, one of the most common applications of Calculus, are frequently heard throughout life.

Content Questions
- What are the characteristics of a function in order to apply Rolle's Theorem to it?
- How can we apply the Mean Value Theorem?
- Why is a function decreasing on a particular interval if the First Derivative Test is negative on that interval?
- Why does a function have upward concavity on an interval if the Second Derivative Test is positive on that interval?
- How do you know from the Second derivative test if a point is a point of inflection?
- How do you use the derivative tests and limits to sketch a curve?
- How can we use extrema to solve optimization problems?

Objectives
Students will know:
- How to apply derivatives to solve problems

Students will be able to:
- Understand the definition of extrema on an interval
- Understand the definition of relative extrema on an open interval
- Find extrema on a closed interval
- Apply calculus to find the maximum/minimum values of a function
- Understand and use both Rolle's Theorem and the Mean Value Theorem
- Use the First Derivative Test to determine where functions are increasing or decreasing and to determine relative extrema
- Use the Second Derivative Test to determine concavity of functions and find points of inflection
- Evaluate limits at infinity and use them to find horizontal asymptotes (when they exist)
- Use the derivative tests, limits, and other algebraic characteristics to sketch curves
- Solve real world problems by finding extrema (optimization problems)

Evidence of Learning	
Assessment	
Assessment plan may include teacher designed formative and summative assessments, a district common assessment, activity, and/or project and analysis of PSAT or SAT data.	
Competencies for 21st Century Learners	
Collaborative Team Member	Effective Communicator
Globally Aware, Active, & Responsible Student/Citizen	Information Literate Researcher
Innovative & Practical Problem Solver	Self-Directed Learner
Resources	
Core Text: Calculus of a Single Variable, Eleventh Edition, Larson & Edwards **Suggested Resources:** Textbook, CalcChat, & CalcView	

Unit 4: Integration	
Content Area: Mathematics	
Course & Grade Level: Calculus Honors, 11-12	

Summary and Rationale	

The basic idea of integration is to find the area under a curve. To find it, we divide the area into infinite rectangles of infinitely small width and sum their areas. This unit builds on the area problem and introduces integrals to solve it.   Throughout the unit, indefinite integrals lead to definite integrals and the Fundamental Theorem of Calculus. Unit 4 culminates in the variable change of u-substitution and finding the antiderivatives of increasingly difficult integrals.

Recommended Pacing	

13 days

New Jersey Student Learning Standards for Mathematics	

Standard: Standards for Mathematical Practice

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New Jersey Student Learning Standards for English Language Arts Companion Standards	

Standard: Science key ideas and details

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Standard: Science Craft and Structure

CPI #	Cumulative Progress Indicator (CPI)
RST.9-10.4	Determine the meaning of symbols, key terms and phrases as they are used in specific scientific or technical content relevant to grades 9-10 texts and topics.

New Jersey Student Learning Standards for Career Readiness, Life Literacies and Key Skills	

Critical thinking and Problem Solving

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Technology Literacy

CPI#	Cumulative Progress Indicator (CPI)
9.4.12.TL.3	Analyze the effectiveness of the process and quality of collaborative environments

New Jersey Student Learning Standards for Technology	
CPI #	Cumulative Progress Indicator (CPI)
8.1	All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

Instructional Focus

Unit Enduring Understandings
- The most useful techniques of integration are actually very important theorems that apply to all functions (multivariable).
- Deep understanding of the methods of integration will help us describe real-world phenomena.

Unit Essential Questions
- How do we use an infinite amount of rectangles to determine an irregular area?
- How does integration reduce the margin of error when calculating area and volume using functions?

Content Understandings
- There are basic integration rules to find antiderivatives.
- Anti-derivatives can be used to find the general as well as particular solution of a differential equation.
- You can use upper and lower sums to find the area under the region of a function.
- You can use limits and geometric functions to evaluate a definite integral.
- You can evaluate a definite integral using the Fundamental Theorem of Calculus.
- The Mean Value Theorem can be applied to integrals.
- You can apply your differentiation techniques when figuring out more complicated integrals.

Content Questions
- How do you find a particular solution of a differential equation given an initial condition?
- How do we use integrals to find the area under the curve of a function?
- What is a definite integral?
- What is the Fundamental Theorem of Calculus?
- How do you find the average value of a function over a closed interval?
- What are the guidelines for making a change of variables in u-substitution?

Objectives

Students will know:
- The Fundamental Theorem of Calculus and how it relates to the concept of an integral

Students will be able to:
- Write the general solution of a differential equation and use the indefinite integral notation for antiderivatives
- Find antiderivatives using basic integration rules and find particular solutions for differential equations
- Estimate the areas of plane regions using sums and find the exact areas using limits
- Use limits and properties of limits to evaluate definite integrals
- Use the Fundamental Theorem of Calculus to evaluate a definite integral
- Understand the Mean Value Theorem and find the average value of a function over a closed interval

- Understand and use the Second Fundamental Theorem of Calculus
- Use pattern recognition, General Power Rule, change of variables, and properties of even and odd functions to evaluate integrals

Evidence of Learning

Assessment

Assessment plan may include teacher designed formative and summative assessments, a district common assessment, activity, and/or project and analysis of PSAT or SAT data.

Competencies for 21st Century Learners

	Collaborative Team Member		Effective Communicator
	Globally Aware, Active, & Responsible Student/Citizen		Information Literate Researcher
	Innovative & Practical Problem Solver		Self-Directed Learner

Resources

Core Text: Calculus of a Single Variable, Eleventh Edition, Larson & Edwards
Suggested Resources: Textbook, CalcChat, & CalcView

Unit 5: Logarithmic and Exponential Functions	

Content Area: Mathematics

Course & Grade Level: Calculus Honors, 11-12

Summary and Rationale	

In mathematics, there are special families of functions. By studying the families of functions, we can compare and contrast their behavior to come to a deeper understanding of all functions. This unit focuses on logarithmic and exponential functions and how to use them in both differentiation and integration. As this unit progresses, natural logs lead to the integration of the six trigonometric functions as well as the integration of rational functions.

Recommended Pacing	

11 days

New Jersey Student Learning Standards for Mathematics	

Standard: Standards for Mathematical Practice

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New Jersey Student Learning Standards for English Language Arts Companion Standards	

Standard: Science key ideas and details

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RST.9-10.3	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

Standard: Science Craft and Structure

CPI #	Cumulative Progress Indicator (CPI)
RST.9-10.4	Determine the meaning of symbols, key terms and phrases as they are used in specific scientific or technical content relevant to grades 9-10 texts and topics.

New Jersey Student Learning Standards for Career Readiness, Life Literacies and Key Skills	

Critical thinking and Problem Solving

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Technology Literacy

CPI#	Cumulative Progress Indicator (CPI)
9.4.12.TL.3	Analyze the effectiveness of the process and quality of collaborative environments

New Jersey Student Learning Standards for Technology	
CPI #	**Cumulative Progress Indicator (CPI)**
8.1	All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

Instructional Focus

Unit Enduring Understandings
- The derivative measures the steepness of the graph of a function at some particular point on the graph. Thus, the derivative is slope.
- The derivative helps us understand change as related to the function.
- The most useful techniques of integration are actually very important theorems that apply to all functions (multivariable).
- Deep understanding of the methods of integration will help us describe real-world phenomena.

Unit Essential Questions
- How is integration the same and how is it different for different families of functions?
- How is differentiation the same and how is it different for different families of functions?

Content Understandings
- You can use the properties of natural logarithmic functions to help simplify taking a derivative of a logarithmic function.
- The six basic trigonometric functions can all now be integrated using ln integration techniques.
- The inverse function of the natural logarithmic function is called the natural exponential function.

Content Questions

- How can you look at the graph of a logarithmic function and reason its derivative?
- What is the relationship between logarithmic and exponential functions?
- How do we use calculus to describe those relationships?

Objectives

Students will know:
- How to differentiate and integrate with natural log and exponential functions

Students will be able to:
- Extend their knowledge of the natural base e, and will find derivatives involving the natural logarithmic function
- Integrate rational functions using the log rule
- Differentiate and integrate natural exponential functions
- Apply methods of logarithmic differentiation

Evidence of Learning
Assessment
Assessment plan may include teacher designed formative and summative assessments, a district common assessment, activity, and/or project and analysis of PSAT or SAT data.

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	Collaborative Team Member	Effective Communicator
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Resources
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Unit 6: Differential Equations

Content Area: Mathematics

Course & Grade Level: Calculus Honors, 11-12

Summary and Rationale
A differential equation is an equation that relates one or more functions and their derivatives. In applications, the functions generally represent physical quantities, the derivatives represent their rates of change, and the differential equation defines a relationship between the two. The unit continues with the introduction of separation of variables to solve differential equations and culminates using differential equations to solve real world applications. This unit builds on the previous work with exponential functions exploring exponential growth and decay using differential equations.

Recommended Pacing
7 days

New Jersey Student Learning Standards for

Standard: Standards for

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Standard: Science key ideas and details

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Interdisciplinary Standards Science	
HS-PS3-1	Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.

Instructional Focus

Unit Enduring Understandings
- Differential equations are to find the maximum and minimum values of systems.

Unit Essential Questions
- What type of phenomena is modeled by differential equations?

Content Understandings
- Use initial conditions to find particular solutions of differential equations.
- Separation of variables is used to solve a single differentiation equation.
- Exponential functions are used to model growth and decay in applied problems.

Content Questions
- How do you verify that a function is a solution of a differential equation?
- How does knowing a half-life help solve an exponential decay application?

Objectives

Students will know:
- How to solve a differential equation

Students will be able to:
- Use separation of variables to solve differential equations
- Use initial conditions to solve for particular solutions of differential equations
- Use exponential functions to model growth and decay problems
- Use differential equations to model and solve real world problems

Evidence of Learning

Assessment

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Competencies for 21st Century Learners

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Resources

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Suggested Resources: Textbook, CalcChat, & CalcView

Unit 7: Applications of Integration	
Content Area: Mathematics	
Course & Grade Level: Calculus Honors, 11-12	
Summary and Rationale	
The basic idea of integration is to find the area under a curve. To find it, we divide the area into infinite rectangles of infinitely small width and sum their areas. This unit builds on the area problem and introduces integrals to solve it. This unit builds on the study of the area problem and introduces areas bounded between two curves. As the unit progresses, integrals are used to find volumes of solids of revolution using both the disk and washer methods.	
Recommended Pacing	
16 days	
New Jersey Student Learning Standards for	
Standard: Standards for	
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Instructional Focus

Unit Enduring Understandings

- Deep understanding of the methods of integration will help us describe real-world phenomena.

Unit Essential Questions

- How does the idea of integration transfer from using an infinite amount of rectangles to determine an irregular area to determining the volume of a solid?
- How does integration reduce the margin of error when calculating area and volume using functions?

Content Understandings

- Integration can be used to find the area of the region bounded by multiple curves
- Area of a region between two intersecting curves can be found using integration.
- Integration can be used to find the volume of a solid.
- Solids of revolution are common applications in STEM.

Content Questions

- How can you use intervals in everyday life?
- How do you decide what function will be subtracted from the other when finding the area between curves and/or bounds?
- What method to find volume can be used to cover solids of revolutions with holes?
- How do you decide to integrate with respect to y instead of x?

Objectives

Students will know:

- How to find the area between curves and volume

Students will be able to:

- Use integration to find the area between two curves
- Understand integration as an accumulation process
- Use disk and washer methods to find volumes of solids of revolution

Evidence of Learning

Assessment

Assessment plan may include teacher designed formative and summative assessments, a district common assessment, activity, and/or project and analysis of PSAT or SAT data.

Competencies for 21st Century Learners

	Collaborative Team Member		Effective Communicator
	Globally Aware, Active, & Responsible Student/Citizen		Information Literate Researcher
	Innovative & Practical Problem Solver		Self-Directed Learner

Resources

Core Text: Calculus of a Single Variable, Eleventh Edition, Larson & Edwards
Suggested Resources: Textbook, CalcChat, & CalcView

Unit 8: Integration Techniques

Content Area: Mathematics

Course & Grade Level: Calculus Honors, 11-12

Summary and Rationale

This unit builds on the student's knowledge of all of the techniques of integration. It continues with the introduction of integration by parts in both the standard and tabular methods and culminates with the discovery that many of the integrals learned can fit into one of the basic integration rules.

Recommended Pacing

6 days

New Jersey Student Learning Standards for

Standard: Standards for

CPI #	Cumulative Progress Indicator (CPI)
1	Make sense of problems and persevere in solving them
2	Reason abstractly and quantitatively
3	Construct viable arguments and critique the reasoning of others
4	Model with mathematics
5	Use appropriate tools strategically
6	Attend to precision
7	Look for and make use of structure
8	Look for and express regularity in repeated reasoning

New Jersey Student Learning Standards for English Language Arts Companion Standards

Standard: Science key ideas and details

CPI #	Cumulative Progress Indicator (CPI)
RST.9-10.3	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

Standard: Science Craft and Structure

CPI #	Cumulative Progress Indicator (CPI)
RST.9-10.4	Determine the meaning of symbols, key terms and phrases as they are used in specific scientific or technical content relevant to grades 9-10 texts and topics.

New Jersey Student Learning Standards for Career Readiness, Life Literacies and Key Skills

Critical thinking and Problem Solving

CPI #	Cumulative Progress Indicator (CPI)
9.4.12.CT.2	Explain the potential benefits of collaborating to enhance critical thinking and problem solving

Creativity and Innovation

CPI#	Cumulative Progress Indicator (CPI)
9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas

Technology Literacy

CPI#	Cumulative Progress Indicator (CPI)
9.4.12.TL.3	Analyze the effectiveness of the process and quality of collaborative environments

New Jersey Student Learning Standards for Technology	
CPI #	**Cumulative Progress Indicator (CPI)**
8.1	All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

Instructional Focus

Unit Enduring Understandings
- The most useful techniques of integration are actually very important theorems that apply to all functions (multivariable).
- Deep understanding of the methods of integration will help us describe real-world phenomena.

Unit Essential Questions
- What patterns are evident in the different techniques for integration?
- What structures are consistent through all integration problems?

Content Understandings
- There are many basic integration rules.
- Trigonometric identities can be used to solve integration.
- Integration by parts can be applied to a wide variety of functions involving products of algebraic and transcendental functions.

Content Questions

- How do we apply the techniques of integration to functions?
- What are two main guidelines for integration by parts?
- When can the Tabular Method be used in integration by parts?

Objectives

Students will know:
- How to integrate by parts

Students will be able to:
- Integrate functions
- Fit integrals to one of the basic integration rules
- Find antiderivatives using integration by parts, including tabular method

Evidence of Learning

Assessment

Assessment plan may include teacher designed formative and summative assessments, a district common assessment, activity, and/or project and analysis of PSAT or SAT data.

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