

AP DAILY VIDEOS

AP Calculus BC

AP Daily is a series of on-demand, short videos—created by expert AP teachers and faculty—that can be used for in-person, online, and blended/hybrid instruction. These videos will cover every topic and skill outlined in the AP Course and Exam Description and launch on AP Classroom, unit-by-unit, on a rolling basis.

Unit 1 RELEASE DATE: 9/1/2020

Unit 2 RELEASE DATE: 9/22/2020

Unit 3 RELEASE DATE: 10/8/2020

Unit 4 RELEASE DATE: 10/22/2020

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Unit 7 RELEASE DATE: 1/11/2021

Unit 8 RELEASE DATE: 2/10/2021

Unit 9 RELEASE DATE: 3/3/2021

Unit 10 RELEASE DATE: 3/25/2021

Unit 1

Video Title	Topic	Video Focus	Instructor
1.1: Daily Video 1	Introducing Calculus—Can Change Occur at an Instant?	Exploring the concept of instantaneous change, by using average rates of change to develop an intuitive understanding of instantaneous rates of change.	Bryan Passwater
1.1: Daily Video 2	Introducing Calculus—Can Change Occur at an Instant?	Methods to approximate instantaneous rates of change within multiple contexts and through multiple representations.	Bryan Passwater
1.2: Daily Video 1	Defining Limits and Using Limit Notation	An introduction to limits, using graphs, and the notation used to express limits; the differences between limit values and function values.	Bryan Passwater
1.2: Daily Video 2	Defining Limits and Using Limit Notation	Connecting limit notation across multiple representations; reinforcing the underlying concept of a limit.	Bryan Passwater
1.2: Daily Video 3	Defining Limits and Using Limit Notation	Practicing problems related to Topic 1.2, with an optional activity for additional practice with these concepts.	Bryan Passwater
1.3: Daily Video 1	Estimating Limit Values from Graphs	An introduction to one-sided limits, using graphs; verifying when a limit does or does not exist, using left- and right-sided limits.	Bryan Passwater
1.3: Daily Video 2	Estimating Limit Values from Graphs	Three cases when limits may fail to exist; exploring the limitations of—and misconceptions about—using graphs to determine limits.	Bryan Passwater
1.3: Daily Video 3	Estimating Limit Values from Graphs	Spotlight on the AP Exam: Multiple examples of how Topic 1.3 might appear.	Bryan Passwater
1.4: Daily Video 1	Estimating Limit Values from Tables	How tables can be used to estimate limits; the limitations of—and common errors made when—utilizing tables.	Bryan Passwater
1.4: Daily Video 2	Estimating Limit Values from Tables	Deepening the understanding of limits, using tables (with a full activity available for additional practice and reinforcement).	Bryan Passwater
1.5: Daily Video 1	Determining Limits Using Algebraic Properties of Limits	Transitioning from estimating limits to determining limits, using one-sided limits with piecewise-defined functions algebraically.	Bryan Passwater
1.5: Daily Video 2	Determining Limits Using Algebraic Properties of Limits	How to determine limits algebraically, using properties of limits involving sums, differences, products, and quotients.	Bryan Passwater
1.5: Daily Video 3	Determining Limits Using Algebraic Properties of Limits	Exploring problems where traditional limit laws cannot be applied; how to address limit problems involving compositions, sums, and products.	Bryan Passwater

Video Title	Topic	Video Focus	Instructor
1.6: Daily Video 1	Determining Limits Using Algebraic Manipulation	An introduction to the idea that algebraic manipulation can sometimes be used to determine limit values, specifically by factoring rational functions.	Bryan Passwater
1.6: Daily Video 2	Determining Limits Using Algebraic Manipulation	Additional examples of algebraic manipulation being used to determine limit values, including functions involving radical or trigonometric expressions.	Bryan Passwater
1.6: Daily Video 3	Determining Limits Using Algebraic Manipulation	Spotlight on the AP Exam: Multiple examples of how Topic 1.6 might appear.	Bryan Passwater
1.7: Daily Video 1	Selecting Procedures for Determining Limits	Selecting algebraic procedures to determine limits of rational and piecewise functions, as well as functions involving trigonometry or radicals.	Bryan Passwater
1.7: Daily Video 2	Selecting Procedures for Determining Limits	Strategies for recognizing and applying procedures with all types of limits from previous topics and through multiple representations.	Bryan Passwater
1.8: Daily Video 1	Determining Limits Using the Squeeze Theorem	Introducing the squeeze theorem through an intuitive approach, utilizing graphs, and connecting it to an understandable context.	Bryan Passwater
1.8: Daily Video 2	Determining Limits Using the Squeeze Theorem	Implementing and reinforcing the conditions required to apply the squeeze theorem.	Bryan Passwater
1.9: Daily Video 1	Connecting Multiple Representations of Limits	Connecting all of the concepts of limits from previous topics, from one representation to another.	Bryan Passwater
1.9: Daily Video 2	Connecting Multiple Representations of Limits	Connecting all representations together, in the context of limits, through the exploration of an activity.	Bryan Passwater
1.10: Daily Video 1	Exploring Types of Discontinuities	Exploring functions graphically and algebraically to determine where, why, and how functions are discontinuous.	Theresa Horvath
1.10: Daily Video 2	Exploring Types of Discontinuities	How to analyze and compare tabular, graphical, analytical, and verbal function representations to determine points of discontinuity.	Theresa Horvath
1.10: Daily Video 3	Exploring Types of Discontinuities	Spotlight on the AP Exam: How Topic 1.10 might appear, with tips for showing proper justification.	Theresa Horvath
1.11: Daily Video 1	Defining Continuity at a Point	Defining continuity at a point, using graphical and piecewise function representations; a demonstration of proper notation and required justification.	Theresa Horvath
1.11: Daily Video 2	Defining Continuity at a Point	How to use graphical and analytical representations of functions to determine whether functions are continuous (or not) at specific points.	Theresa Horvath

Video Title	Topic	Video Focus	Instructor
1.11: Daily Video 3	Defining Continuity at a Point	Spotlight on the AP Exam: How Topic 1.11 might appear, with tips for showing proper justification.	Theresa Horvath
1.12: Daily Video 1	Confirming Continuity over an Interval	Examining functions graphically and analytically, to determine the intervals on which the function is continuous.	Theresa Horvath
1.12: Daily Video 2	Confirming Continuity over an Interval	Comparing and contrasting functions, both graphically and analytically, to determine whether they are continuous for all real numbers, on their domain, or neither.	Theresa Horvath
1.13: Daily Video 1	Removing Discontinuities	A discussion of which types of discontinuities can be removed; if removable, methods are shown for modifying function definitions in order to remove the discontinuity.	Theresa Horvath
1.13: Daily Video 2	Removing Discontinuities	Sample problems for practice with removing function discontinuities (or determining the discontinuity is non-removable).	Theresa Horvath
1.14: Daily Video 1	Connecting Infinite Limits and Vertical Asymptotes	How one-sided limits of infinity can be used to prove the existence of vertical asymptotes.	Theresa Horvath
1.14: Daily Video 2	Connecting Infinite Limits and Vertical Asymptotes	Examining functions with vertical asymptotes; how to communicate about limits as the function approaches the vertical asymptote.	Theresa Horvath
1.14: Daily Video 3	Connecting Infinite Limits and Vertical Asymptotes	Examples of functions that possess vertical asymptotes and limits equal to infinity.	Theresa Horvath
1.15: Daily Video 1	Connecting Limits at Infinity and Horizontal Asymptotes	The connection between limits at infinity and the existence of horizontal asymptotes on the graph of functions.	Theresa Horvath
1.15: Daily Video 2	Connecting Limits at Infinity and Horizontal Asymptotes	How to analyze functions of various representations to determine their limits at infinity and the location of horizontal asymptotes.	Theresa Horvath
1.15: Daily Video 3	Connecting Limits at Infinity and Horizontal Asymptotes	Examining the end behavior of functions using limits at infinity; comparing magnitudes of functions to evaluate limits.	Theresa Horvath
1.16: Daily Video 1	Working with the Intermediate Value Theorem (IVT)	The intermediate value theorem (IVT), its conditions, and examples of its application.	Theresa Horvath
1.16: Daily Video 2	Working with the Intermediate Value Theorem (IVT)	Spotlight on the AP Exam: How Topic 1.16 might appear, with tips for showing proper justification and confirming that theorem conditions have been met, using multiple representations.	Theresa Horvath

Unit 2

Video Title	Topic	Video Focus	Instructor
2.1: Daily Video 1	Defining Average and Instantaneous Rates of Change at a Point	This video will present a discovery of the difference quotients for average rates of change and usage of limits to express instantaneous rates of change.	Theresa Horvath
2.1: Daily Video 2	Defining Average and Instantaneous Rates of Change at a Point	This video will demonstrate processes to compute average and instantaneous rates of change using multiple representations.	Theresa Horvath
2.1: Daily Video 3	Defining Average and Instantaneous Rates of Change at a Point	This video will look at ways Topic 2.1 might appear on the AP Exam. Tips will be shared for showing proper notation.	Theresa Horvath
2.2: Daily Video 1	Defining the Derivative of a Function and Using Derivative Notation	This video will define the derivative of a function and apply the definition in various situations, including tangent line equations, using appropriate mathematical notation.	Theresa Horvath
2.2: Daily Video 2	Defining the Derivative of a Function and Using Derivative Notation	This video will demonstrate correct procedures to compute the derivative of a function and tangent line equations using multiple representations.	Theresa Horvath
2.2: Daily Video 3	Defining the Derivative of a Function and Using Derivative Notation	This video will look at ways Topic 2.2 might appear on the AP Exam. Tips will be shared for showing proper notation.	Theresa Horvath
2.3: Daily Video 1	Estimating Derivatives of a Function at a Point	This video will explore methods used to approximate the derivative of a function at a point using data from a variety of representations, with and without technology.	Theresa Horvath
2.3: Daily Video 2	Estimating Derivatives of a Function at a Point	This video will look at ways Topic 2.3 might appear on the AP Exam. Tips will be shared for showing proper notation and justification.	Theresa Horvath
2.4: Daily Video 1	Connecting Differentiability and Continuity—Determining When Derivatives Do and Do Not Exist	This video will define differentiability and look at examples when the derivative exists, or fails to exist, and how this connects with the continuity of a function.	Theresa Horvath

Video Title	Topic	Video Focus	Instructor
2.4: Daily Video 2	Connecting Differentiability and Continuity—Determining When Derivatives Do and Do Not Exist	This video will expand upon the topic of differentiability and explore questions involving multiple representations. Proper rationales for justifying conclusions will be demonstrated.	Theresa Horvath
2.5: Daily Video 1	Applying the Power Rule	This video will show a proof of the Power Rule. Examples will be shown applying this rule to find the derivative of power functions with a coefficient of one.	Theresa Horvath
2.6: Daily Video 1	Derivative Rules—Constant, Sum, Difference, and Multiple	This video will introduce the basic differentiation rules involving a constant, a sum, a difference, and a constant multiple.	Tony Record
2.6: Daily Video 2	Derivative Rules—Constant, Sum, Difference, and Constant Multiple	This video will expand upon all previously taught differentiation rules by introducing problems involving graphical and numerical representations of functions.	Tony Record
2.6: Daily Video 3	Derivative Rules—Constant, Sum, Difference, and Constant Multiple	This video will focus on problems involving equations of tangent lines while utilizing all the differentiation rules that have been taught thus far.	Tony Record
2.7: Daily Video 1	Derivatives of $\cos x$, $\sin x$, e^x , and $\ln x$	This video will introduce the basic rules for differentiating four of the most common transcendental functions— $\cos x$, $\sin x$, e^x , and $\ln x$.	Tony Record
2.8: Daily Video 1	The Product Rule	This video will introduce the method by which the derivative of a product of two functions can be calculated.	Tony Record
2.8: Daily Video 2	The Product Rule	In this video, students will compute derivatives using the product rule given graphical and numerical representations of functions.	Tony Record
2.9: Daily Video 1	The Quotient Rule	This video will introduce the method by which the derivative of a quotient of two functions can be calculated.	Tony Record
2.9: Daily Video 2	The Quotient Rule	In this video, students will compute derivatives using the quotient rule given graphical and numerical representations of functions.	Tony Record
2.10: Daily Video 1	Finding the Derivatives of Tangent, Cotangent, Secant, and/or Cosecant Functions	This video will introduce the basic formulas for differentiating the remaining four trigonometric functions— $\tan x$, $\cot x$, $\sec x$, and $\csc x$.	Tony Record

Unit 3

Video Title	Topic	Video Focus	Instructor
3.1: Daily Video 1	The Chain Rule	This video will introduce how the chain rule can be used to differentiate composite functions.	Tony Record
3.1: Daily Video 2	The Chain Rule	This video will feature a variety of scenarios in which the chain rule must be utilized, including problems that feature multiple representations of functions.	Tony Record
3.1: Daily Video 3	The Chain Rule	This video will feature problems whose functions require two applications of the chain rule in order to differentiate.	Tony Record
3.2: Daily Video 1	Implicit Differentiation	This video will introduce the concept of implicit differentiation by outlining the process by which the derivative of several expressions and relations can be calculated.	Tony Record
3.2: Daily Video 2	Implicit Differentiation	This video will expand upon the concept of implicit differentiation by focusing on a few more problem types that require this technique.	Tony Record
3.3: Daily Video 1	Differentiating Inverse Functions	This video will introduce three ways in which the derivative of an inverse function may be computed.	Tony Record
3.3: Daily Video 2	Differentiating Inverse Functions	This video will focus on a method that works best in all situations when taking the derivative of an inverse function.	Tony Record
3.4: Daily Video 1	Differentiating Inverse Trigonometric Functions	This video will introduce, develop, and implement differentiation rules for inverse trigonometric functions.	Bryan Passwater
3.4: Daily Video 2	Differentiating Inverse Trigonometric Functions	This video will connect inverse trigonometric derivatives to previous topics and explore how these problems may appear on the AP Exam through a “5 for 5” activity.	Bryan Passwater
3.5: Daily Video 1	Selecting Procedures for Calculating Derivatives	This video will focus on strategies for identifying proper differentiation techniques needed with a variety of problems involving multiple representations.	Bryan Passwater
3.5: Daily Video 2	Selecting Procedures for Calculating Derivatives	This video will continue to implement strategies for identifying and selecting procedures for differentiation. Several AP style examples will be included.	Bryan Passwater
3.6: Daily Video 1	Calculating Higher-Order Derivatives	This video will introduce higher-order derivatives and the notation used to represent them. The video will include a “Find the Error” activity to reinforce these ideas.	Bryan Passwater
3.6: Daily Video 2	Calculating Higher-Order Derivatives	This video will work through several examples involving higher order derivatives as part of a “Twinning” activity.	Bryan Passwater

Unit 4

Video Title	Topic	Video Focus	Instructor
4.1: Daily Video 1	Interpreting the Meaning of the Derivative in Context	This video will introduce the concept of a derivative in context. Understanding and connecting units with functions and their derivatives will also be emphasized.	Bryan Passwater
4.1: Daily Video 2	Interpreting the Meaning of the Derivative in Context	This video will focus on how to interpret a derivative in context, including strategies to ensure proper responses on the AP Exam.	Bryan Passwater
4.1: Daily Video 3	Interpreting the Meaning of the Derivative in Context	This video will discuss interpreting the rate of a rate in context while also introducing a “Find the Error” activity that targets common errors on the AP Exam.	Bryan Passwater
4.2: Daily Video 1	Straight-Line Motion—Connecting Position, Velocity, and Acceleration	This video will introduce straight-line motion and the connections between position, velocity, and acceleration while incorporating multiple representations.	Bryan Passwater
4.2: Daily Video 2	Straight-Line Motion—Connecting Position, Velocity, and Acceleration	This video will cover the concepts of “speeding up” and “slowing down” as well as using graphing calculator technology appropriately with particle motion on the AP Exam.	Bryan Passwater
4.2: Daily Video 3	Straight-Line Motion—Connecting Position, Velocity, and Acceleration	This video will look at how particle motion problems may appear on the AP Exam in a variety of ways including equations, graphs, and tables, as well as with and without technology.	Bryan Passwater
4.3: Daily Video 1	Rates of Change in Applied Contexts Other Than Motion	This video will explore how units help us understand rates of change.	Jamil Siddiqui
4.3: Daily Video 2	Rates of Change in Applied Contexts Other Than Motion	This video will focus on interpreting rates of change in applied contexts.	Jamil Siddiqui
4.4: Daily Video 1	Introduction to Related Rates	This video will focus on differentiating equations with respect to different variables.	Jamil Siddiqui
4.4: Daily Video 2	Introduction to Related Rates	This video will look at how to create an equation that will connect rates.	Jamil Siddiqui
4.4: Daily Video 3	Introduction to Related Rates	This video will demonstrate the process of solving a related rates problem.	Jamil Siddiqui
4.5: Daily Video 1	Solving Related Rates Problems	This video will focus on interpreting the answer to a related rates problem.	Jamil Siddiqui
4.5: Daily Video 2	Solving Related Rates Problems	This video will focus on solving related rates problems.	Jamil Siddiqui
4.5: Daily Video 3	Solving Related Rates Problems	This video will expand on solving related rates problems by looking at more examples.	Jamil Siddiqui

Video Title	Topic	Video Focus	Instructor
4.6: Daily Video 1	Approximating Values of a Function Using Local Linearity and Linearization	This video will explore how functions will behave linearly if looked at on a small enough interval.	Jamil Siddiqui
4.6: Daily Video 2	Approximating Values of a Function Using Local Linearity and Linearization	This video will focus on using tangent lines to approximate values.	Jamil Siddiqui
4.7: Daily Video 1	Using L'Hospital's Rule for Determining Limits of Indeterminate Forms	This video will introduce L'Hospital's rule and show the proper notation and implementation required to apply it on the AP Exam.	Bryan Passwater
4.7: Daily Video 2	Using L'Hospital's Rule for Determining Limits of Indeterminate Forms	This video will look at a variety of examples that utilize L'Hospital's rule including problems involving equations, graphs, tables, and functions defined by other functions.	Bryan Passwater