

## RESOURCE ALIGNMENT CHART

The following are a selection of resources aligned with the skill and/or topic addressed in the module:

Module	AP Calculus Course & Exam Description	AP Insight Challenge Areas and Building Blocks	Classroom Resources (College Board)	Student Resources (Other)	APSI Handbook	Online Teacher Community	Sample Released FRQs
<b>1 Limits: Approximating Values and Functions</b>	Instructional Strategy: <i>Create Representations</i> (p. 33)	<b>Reasoning with Limits and Continuity:</b> <i>Connecting Limits and Graphical Behavior</i>  <b>Riemann Sums and Definite Integrals:</b> <i>Approximating Area with Riemann Sums</i>	<i>Special Focus: Approximation</i>  <i>AP Calculus: Slope Fields</i>  <i>Differential Equations: Multiple Representations, Solutions, and Teaching Opportunities</i> (p. 4–24)	<b>Khan Academy:</b> <i>Estimating Limits Numerically</i> (video)  <b>Penn State University:</b> <i>Tangent Line Approximations &amp; Differentials</i> (applet)	Lesson 17, p. 185	Discussion Board: <i>Limits Questions</i>	AB 2015 #3b  AB 2012 #1a, 1c
<b>2 Selecting Procedures for Derivatives</b>	Instructional Strategy: <i>Discussion Groups</i> (p. 34)	<b>Understanding and Calculating Derivatives:</b> <i>Differentiating Combined Algebraic Functions</i>  <i>Differentiating Transcendental Functions</i>	<b>Course Planning and Pacing Guide:</b> <i>Lindsey Bibler</i> (p. 21)  <b>Course Planning and Pacing Guide:</b> <i>Brendan Murphy</i> (p. 14–15)	<b>Khan Academy:</b> <i>Product and Quotient Rules and Chain Rule</i> (videos)  <b>University of Houston:</b> <i>Calculation of Derivatives</i> (video)	Lesson 6, p. 71	Discussion Board: <i>Simplifying the Quotient Rule</i>  and <i>“Rule” for Logarithmic Differentiation?</i>	AB 2013 #1a  AB 2011(B) #4b
<b>3 Establishing Conditions for Definitions and Theorems</b>	Instructional Strategies: <i>Graphic Organizer</i> (p. 35) and template for <i>Constructing an Argument</i> (p. 33)	<b>Reasoning with Limits and Continuity:</b> <i>Applying the Existence Theorems</i>	<b>Course Planning and Pacing Guide:</b> <i>Robert Arrigo</i> (p. 10, 17)	<b>Khan Academy:</b> <i>Mean Value Theorem</i> (video)	Lesson 12, p. 136–137  Lesson 14, p. 160–162	Discussion Board: <i>Mean Value Existence Theorem</i>	AB 2014 #4b  AB 2013 #3b

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<b>4 Justifying Properties and Behaviors of Functions Using Derivatives</b>	Instructional Strategies: <i>Critique Reasoning</i> (p. 34) and <i>Quick Write</i> (p. 36)	<b>Derivatives and Properties of Functions:</b> <i>The First Derivative Test</i> <i>Extrema</i> <i>Concavity and Inflection</i>	<i>Curriculum Module: Extrema</i> <i>Commentary on the Instructions for the Free Response Section of the AP Calculus Exams</i>	<b>Khan Academy:</b> <i>Analyzing Functions with Calculus</i> (videos and practice questions)	Lesson 11, p. 115–132	Discussion Board: <i>Second Derivative Test wording?</i> and <i>Justifying concavity intervals</i>	AB 2015 #5a-c AB 2014 #3b AB 2014 #5a
<b>5 Related Rates: Analyzing Problems in Context</b>	Instructional Strategy: <i>Marking the Text</i> (p. 35)	<b>Related Rates of Change:</b> <i>Geometric Problems: One Quantity Varying</i> <i>Geometric Problems: Several Quantities Varying</i> <i>Non-Geometric Related Rates Problems</i>	<b>Course Planning and Pacing Guide:</b> <i>Lindsey Bibler</i> (p. 34–36)	<b>Khan Academy:</b> <i>Related Rates</i> (videos and practice questions)	Lesson 15, p. 166–168 Sample syllabus activity, p. 200	Discussion Board: <i>Solving for rate of change of theta in right triangle problems</i> and <i>Related Rates in FRQ</i>	AB 2014 #4d AB 2008 #3a AB 2002 #5b
<b>6 Definite Integrals: Interpreting Notational Expressions</b>	Instructional Strategy: <i>Notation Read Aloud</i> (p. 36)	<b>Applications of Definite Integrals:</b> <i>Calculating Average Value of a Function</i> <i>Interpreting Notation in the Context of a Problem</i>	<b>Course Planning and Pacing Guide:</b> <i>Ruth Dover</i> (p. 25–26)	<b>Khan Academy:</b> <i>Definite integral as area</i> (video and practice questions)	Lesson 6, p. 77–79 Lesson 10, p. 111	Discussion Board: <i>Switching upper/lower limit in a definite integral</i> and <i>How to read “say” some of the notation</i>	BC 2011 (Form B) #6c BC 2015 #6b AB 2016 #5a

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<b>7 Applying Procedures for Integration by Substitution</b>	Instructional Strategies: <i>Error Analysis</i> (p. 34) and <i>Sort the Steps</i> (p. 36)	<b>Calculating Antiderivatives &amp; Evaluating Integrals</b> <i>Antidifferentiation Techniques</i>	<b>Course Planning and Pacing Guide:</b> <i>Mark Howell</i> (p. 30, 33)	<b>Khan Academy:</b> <i>u-substitution</i> (videos and practice questions)	<i>Error Analysis:</i> Lesson 6, p. 72–73  <i>Sort the Steps:</i> Lesson 8, p. 95	Discussion Board: <i>U-Substitution with Improper Integrals</i>  Resource: Penn State Calculus Applets: Methods of Integration: Substitution	AB 2016 #5a, 5b AB 2014 #6c
<b>8 Interpreting Context for Definite Integrals</b>	See “Communicating in Mathematics” (p. 37–38)	<b>Applications of Definite Integrals</b> <i>Interpreting Notation in the Context of a Problem</i>	<b>Course Planning and Pacing Guide:</b> <i>Robert Arrigo</i> (p. 32, 44)  <b>Student Performance Q&amp;A</b> 2013 Free-Response Questions (see p. 1–2)	<b>Khan Academy:</b> <i>Integral Applications with Rectilinear Motion</i> (video and practice question)	<i>Communicating in Mathematics:</i> Lesson 11, p. 114–128	Resource: <i>Chief Reader’s Presentation (2012 Exam)</i> (see slides 15–20)	AB 2012 #1b AB 2015 #3b

Note that the resources noted above are only a selection of the full range of resources available. More are available at the links below:

- ▶ [AP Calculus Course and Exam Description \(CED\)](#)
- ▶ [AP Insight](#)
- ▶ [AP Calculus AB Classroom Resources](#)
- ▶ [AP Calculus BC Classroom Resources](#)
- ▶ [Davidson Next](#) (free online tutorials on challenging topics in AP Calculus AB/BC)
- ▶ [Khan Academy](#) tutorials
- ▶ [AP Summer Institute \(APSI\)](#)
- ▶ [Online Teacher Community](#) (login required)
- ▶ [Released Free Response Questions \(FRQs\)](#)