AP®
Calculus
AB

Course Lesson Plan

On the pages that follow is a week-by-week lesson guide for your student to follow in order to stay on track with Thinkwell's AP Calculus AB coursework.

Under each week's header you'll see **LEARNING & CONTENT OVERVIEW**, **ASSESSMENT PREPARATION**, and **ASSESSMENT** categories. The estimated time required for each activity is noted. Feel free to work as quickly or as slowly through the week's content as is appropriate for your student's learning style. Some topics may take more time, some may take less.

We suggest printing the page for each week and keeping it handy. Please let us know if you have any questions about the content here. Email us at support@thinkwell.com.

WEEK 1 – Unit 1: Limits and Continuity

LEARNING & CONTENT OVERVIEW:

1.1.1 An Introduction to Thinkwell Calculus
Video Lecture length: 2:36 minutes

❏ Instruction: 1 Video Lecture
❏ Instruction: Notes
❏ Practice: Thinkwell Exercise

1.1.2 The Two Questions of Calculus
Video Lecture length: 9:54 minutes

❏ Instruction: 1 Video Lecture
❏ Instruction: Notes
❏ Practice: Thinkwell Exercise

1.1.3 How to Do Math
Video Lecture length: 4:47 minutes

❏ Instruction: 1 Video Lecture
❏ Instruction: Notes
❏ Practice: Thinkwell Exercise

1.1.4 Average Rates of Change
Video Lecture length: 11:03 minutes

❏ Instruction: 1 Video Lecture
❏ Instruction: Notes
❏ Practice: Thinkwell Exercise

1.1.5 Finding Rate of Change over an Interval
Video Lecture length: 18:23 minutes

❏ Instruction: 1 Video Lecture
❏ Instruction: Notes
❏ Practice: Thinkwell Exercise

1.1.6 Finding Limits Graphically
Video Lecture length: 14:41 minutes

❏ Instruction: 1 Video Lecture
❏ Instruction: Notes
❏ Practice: Thinkwell Exercise

1.1.7 The Limit Laws, Part I
Video Lecture length: 2:31 minutes

❏ Instruction: 1 Video Lecture
❏ Instruction: Notes
❏ Practice: Thinkwell Exercise

WEEK 2 – Unit 1: Limits and Continuity

LEARNING & CONTENT OVERVIEW:

1.1.8 The Limit Laws, Part II
Video Lecture length: 13:55 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

1.1.9 One-Sided Limits
Video Lecture length: 5:18 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

1.1.10 The Squeeze Theorem
Video Lecture length: 12:40 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

1.1.11 Continuity and Discontinuity
Video Lecture length: 3:39 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

WEEK 3 – Unit 1: Limits and Continuity (continued)

LEARNING & CONTENT OVERVIEW:

1.1.12 Evaluating Limits
Video Lecture length: 19:10 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

1.1.13 Limits and Indeterminate Forms
Video Lecture length: 18:56 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

1.1.14 Two Techniques for Evaluating Limits
Video Lecture length: 17:55 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

WEEK 4 – Unit 1: Limits and Continuity (continued)

LEARNING & CONTENT OVERVIEW:

1.1.15 An Overview of Limits
Video Lecture length: 14:16 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

1.1.16 Vertical Asymptotes
Video Lecture length: 8:17 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

1.1.17 Horizontal Asymptotes and Infinite Limits
Video Lecture length: 17:43 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

WEEK 5 – Unit 1: Limits and Continuity (continued) and Unit 2: Differentiation: Definition and Basic Derivative Rules

ASSESSMENT PREPARATION:

Estimated time needed: 2 hours

❑ Unit 1 Practice Test

ASSESSMENT:

Estimated time needed: 1.5 hours

❑ Unit 1 Test

LEARNING & CONTENT OVERVIEW:

2.1.1 Rates of Change, Secants, and Tangents
Video Lecture length: 18:55 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

WEEK 6 – Unit 2: Differentiation: Definition and Basic Derivative Rules (continued)

LEARNING & CONTENT OVERVIEW:

2.1.2 Finding Instantaneous Velocity
Video Lecture length: 19:58 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

2.1.3 The Derivative
Video Lecture length: 11:26 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

2.1.4 Instantaneous Rate
Video Lecture length: 14:38 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

2.1.5 The Slope of a Tangent Line
Video Lecture length: 11:16 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

WEEK 7 – Unit 2: Differentiation: Definition and Basic Derivative Rules (continued)

LEARNING & CONTENT OVERVIEW:

2.1.6 The Equation of a Tangent Line
Video Lecture length: 17:56 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

2.1.7 Differentiability
Video Lecture length: 2:35 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

2.1.8 The Derivative of the Reciprocal Function
Video Lecture length: 17:56 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

WEEK 8 – Unit 2: Differentiation: Definition and Basic Derivative Rules (continued)

LEARNING & CONTENT OVERVIEW:

2.1.9 The Derivative of the Square Root Function
Video Lecture length: 15:19 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

2.1.10 A Shortcut for Finding Derivatives
Video Lecture length: 14:03 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

2.1.11 A Quick Proof of the Power Rule
Video Lecture length: 9:48 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

2.1.12 Uses of the Power Rule
Video Lecture length: 19:43 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

WEEK 9 – Unit 2: Differentiation: Definition and Basic Derivative Rules (continued)

LEARNING & CONTENT OVERVIEW:

2.1.13 The Product Rule
Video Lecture length: 20:43 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

2.1.14 The Quotient Rule
Video Lecture length: 13:10 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

2.1.15 The Derivatives of Trigonometric Functions
Video Lecture length: 13:39 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

2.1.16 Derivatives of Exponential Functions
Video Lecture length: 23:17 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

WEEK 10 – Unit 2: Differentiation: Definition and Basic Derivative Rules (continued)

LEARNING & CONTENT OVERVIEW:

2.1.17 The Derivative of the Natural Log Function
Video Lecture length: 13:24 minutes

❏ Instruction: 1 Video Lecture
❏ Instruction: Notes
❏ Practice: Thinkwell Exercise

ASSESSMENT PREPARATION:

Estimated time needed: 2 hours

❏ Unit 2 Practice Test

ASSESSMENT:

Estimated time needed: 1.5 hours

❏ Unit 2 Test

WEEK 11 – Unit 3: Differentiation: Composite, Implicit, and Inverse Functions

LEARNING & CONTENT OVERVIEW:

3.1.1 An Introduction to the Chain Rule
Video Lecture length: 17:52 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

3.1.2 Using the Chain Rule
Video Lecture length: 12:53 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

3.1.3 Combining Computational Techniques
Video Lecture length: 14:23 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

3.1.4 Using the Derivative Rules with Transcendental Functions
Video Lecture length: 14:42 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

WEEK 12 – Unit 3: Differentiation: Composite, Implicit, and Inverse Functions (continued)

LEARNING & CONTENT OVERVIEW:

3.1.5 An Introduction to Implicit Differentiation
Video Lecture length: 14:43 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

3.1.6 Finding the Derivative Implicitly
Video Lecture length: 12:14 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

3.1.7 Differentiating Logarithmic Functions
Video Lecture length: 12:58 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

3.1.8 Logarithmic Differentiation
Video Lecture length: 11:36 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

3.1.9 Derivatives of Inverse Functions
Video Lecture length: 12:12 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

WEEK 13 – Unit 3: Differentiation: Composite, Implicit, and Inverse Functions (continued)

LEARNING & CONTENT OVERVIEW:

3.1.10 Derivatives of Inverse Trigonometric Functions
Video Lecture length: 11:30 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

ASSESSMENT PREPARATION:

Estimated time needed: 2 hours

❑ Unit 3 Practice Test

ASSESSMENT:

Estimated time needed: 1.5 hours

❑ Unit 3 Test

WEEK 14 – Unit 4: Contextual Applications of Differentiation

LEARNING & CONTENT OVERVIEW:

4.1.1 Acceleration and the Derivative
Video Lecture length: 5:44 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

4.1.2 More on Instantaneous Rate
Video Lecture length: 18:32 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

4.1.3 Solving Word Problems Involving Distance and Velocity
Video Lecture length: 22:06 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

WEEK 15 – Unit 4: Contextual Applications of Differentiation (continued)

LEARNING & CONTENT OVERVIEW:

4.1.4 The Pebble Problem
Video Lecture length: 15.12 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

4.1.5 The Ladder Problem
Video Lecture length: 14:18 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

4.1.6 The Baseball Problem
Video Lecture length: 18:21 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

WEEK 16 – Unit 4: Contextual Applications of Differentiation (continued)

LEARNING & CONTENT OVERVIEW:

4.1.7 The Blimp Problem
Video Lecture length: 12:17 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

4.1.8 Math Anxiety
Video Lecture length: 5:32 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

4.1.9 Higher-Order Derivatives and Linear Approximation
Video Lecture length: 20:57 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

WEEK 17 – Unit 4: Contextual Applications of Differentiation (continued)

LEARNING & CONTENT OVERVIEW:

4.1.10 Using the Tangent Line Approximation Formula
Video Lecture length: 24:22 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

4.1.11 Indeterminate Forms
Video Lecture length: 8:52 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

4.1.12 An Introduction to L'Hôpital's Rule
Video Lecture length: 7:44 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

4.1.13 Basic Uses of L'Hôpital's Rule
Video Lecture length: 10:53 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

4.1.14 More Exotic Examples of Indeterminate Forms
Video Lecture length: 12:48 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

WEEK 18 – Unit 4: Contextual Applications of Differentiation (continued) and Unit 5: Analytical Applications of Differentiation

ASSESSMENT PREPARATION:

Estimated time needed: 2 hours

❑ Unit 4 Practice Test

ASSESSMENT:

Estimated time needed: 1.5 hours

❑ Unit 4 Test

LEARNING & CONTENT OVERVIEW:

5.1.1 Three Big Theorems
Video Lecture length: 10:38 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

5.1.2 Critical Points
Video Lecture length: 17:41 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

WEEK 19 – Unit 5: Analytical Applications of Differentiation (continued)

LEARNING & CONTENT OVERVIEW:

5.1.3 Maximum and Minimum
Video Lecture length: 21:59 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

5.1.4 Regions Where a Function Increases or Decreases
Video Lecture length: 19:54 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

5.1.5 The First Derivative Test
Video Lecture length: 2:45 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

WEEK 20 – Unit 5: Analytical Applications of Differentiation (continued)

LEARNING & CONTENT OVERVIEW:

5.1.6 Concavity and Inflection Points
Video Lecture length: 13:12 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

5.1.7 Using the Second Derivative to Examine Concavity
Video Lecture length: 17:01 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

5.1.8 Graphs of Polynomial Functions
Video Lecture length: 10:13 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

5.1.9 Cusp Points and the Derivative
Video Lecture length: 13:53 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

5.1.10 Domain-Restricted Functions and the Derivative
Video Lecture length: 10:20 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

WEEK 21 – Unit 5: Analytical Applications of Differentiation (continued)

LEARNING & CONTENT OVERVIEW:

5.1.11 The Second Derivative Test
Video Lecture length: 3:27 minutes

- ❏ Instruction: 1 Video Lecture
- ❏ Instruction: Notes
- ❏ Practice: Thinkwell Exercise

5.1.12 Graphing Functions with Asymptotes
Video Lecture length: 10:15 minutes

- ❏ Instruction: 1 Video Lecture
- ❏ Instruction: Notes
- ❏ Practice: Thinkwell Exercise

5.1.13 Functions with Asymptotes and Holes
Video Lecture length: 3:28 minutes

- ❏ Instruction: 1 Video Lecture
- ❏ Instruction: Notes
- ❏ Practice: Thinkwell Exercise

5.1.14 Functions with Asymptotes and Critical Points
Video Lecture length: 17:20 minutes

- ❏ Instruction: 1 Video Lecture
- ❏ Instruction: Notes
- ❏ Practice: Thinkwell Exercise

5.1.15 Morale Moment
Video Lecture length: 5:39 minutes

- ❏ Instruction: 1 Video Lecture
- ❏ Instruction: Notes
- ❏ Practice: Thinkwell Exercise

WEEK 22 – Unit 5: Analytical Applications of Differentiation (continued)

LEARNING & CONTENT OVERVIEW:

5.1.16 The Connection Between Slope and Optimization
Video Lecture length: 27:17 minutes

❏ Instruction: 1 Video Lecture
❏ Instruction: Notes
❏ Practice: Thinkwell Exercise

5.1.17 The Fence Problem
Video Lecture length: 25:03 minutes

❏ Instruction: 1 Video Lecture
❏ Instruction: Notes
❏ Practice: Thinkwell Exercise

5.1.18 The Box Problem
Video Lecture length: 20:38 minutes

❏ Instruction: 1 Video Lecture
❏ Instruction: Notes
❏ Practice: Thinkwell Exercise

WEEK 23 – Unit 5: Analytical Applications of Differentiation (continued)

LEARNING & CONTENT OVERVIEW:

5.1.19 The Can Problem
Video Lecture length: 20:47 minutes

- ❏ Instruction: 1 Video Lecture
- ❏ Instruction: Notes
- ❏ Practice: Thinkwell Exercise

5.1.20 The Wire-Cutting Problem
Video Lecture length: 24:40 minutes

- ❏ Instruction: 1 Video Lecture
- ❏ Instruction: Notes
- ❏ Practice: Thinkwell Exercise

5.1.21 Using Implicit Differentiation
Video Lecture length: 22:24 minutes

- ❏ Instruction: 1 Video Lecture
- ❏ Instruction: Notes
- ❏ Practice: Thinkwell Exercise

WEEK 24 – Unit 5: Analytical Applications of Differentiation (continued)

LEARNING & CONTENT OVERVIEW:

5.1.22 Applying Implicit Differentiation
Video Lecture length: 22:53 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

ASSESSMENT PREPARATION:

Estimated time needed: 2 hours

❑ Unit 5 Practice Test

ASSESSMENT:

Estimated time needed: 1.5 hours

❑ Unit 5 Test

WEEK 25 – Unit 6: Integration and Accumulation of Change

LEARNING & CONTENT OVERVIEW:

6.1.1 Antidifferentiation
Video Lecture length: 13:59 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

6.1.2 Antiderivatives of Powers of *x*
Video Lecture length: 17:56 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

6.1.3 Antiderivatives of Trigonometric and Exponential Functions
Video Lecture length: 10:24 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

6.1.4 Undoing the Chain Rule
Video Lecture length: 8:30 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

WEEK 26 – Unit 6: Integration and Accumulation of Change (continued)

LEARNING & CONTENT OVERVIEW:

6.1.5 Integrating Polynomials by Substitution
Video Lecture length: 15:24 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

6.1.6 Integrating Composite Trigonometric Functions by Substitution
Video Lecture length: 12:44 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

6.1.7 Integrating Composite Exponential and Rational Functions by Substitution
Video Lecture length: 13:30 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

6.1.8 More Integrating Trigonometric Functions by Substitution
Video Lecture length: 7:19 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

6.1.9 Choosing Effective Function Decompositions
Video Lecture length: 11:42 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

WEEK 27 – Unit 6: Integration and Accumulation of Change (continued)

LEARNING & CONTENT OVERVIEW:

6.1.10 Approximating Areas of Plane Regions
Video Lecture length: 9:39 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

6.1.11 Areas, Riemann Sums, and Definite Integrals
Video Lecture length: 13:40 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

6.1.12 The Fundamental Theorem of Calculus, Part I
Video Lecture length: 11:46 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

6.1.13 The Fundamental Theorem of Calculus, Part II
Video Lecture length: 16:28 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

6.1.14 Illustrating the Fundamental Theorem of Calculus
Video Lecture length: 13:55 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

WEEK 28 – Unit 6: Integration and Accumulation of Change (continued)

LEARNING & CONTENT OVERVIEW:

6.1.15 Evaluating Definite Integrals
Video Lecture length: 12:53 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

6.1.16 Long Division
Video Lecture length: 9:34 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

6.1.17 More Calculus of Inverse Trigonometric Functions
Video Lecture length: 9:31 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

6.1.18 Deriving the Trapezoidal Rule
Video Lecture length: 12:36 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

6.1.19 An Example of the Trapezoidal Rule
Video Lecture length: 7:15 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

WEEK 29 – Unit 6: Integration and Accumulation of Change (continued) and Unit 7: Differential Equations

ASSESSMENT PREPARATION:

Estimated time needed: 2 hours

❑ Unit 6 Practice Test

ASSESSMENT:

Estimated time needed: 1.5 hours

❑ Unit 6 Test

LEARNING & CONTENT OVERVIEW:

7.1.1 An Introduction to Differential Equations

Video Lecture length: 10:57 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

7.1.2 Direction Fields

Video Lecture length: 5:49 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

WEEK 30 – Unit 7: Differential Equations (continued)

LEARNING & CONTENT OVERVIEW:

7.1.3 Solving Separable Differential Equations
Video Lecture length: 8:44 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

7.1.4 Finding a Particular Solution
Video Lecture length: 6:25 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

7.1.5 Exponential Growth
Video Lecture length: 12:20 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

7.1.6 Radioactive Decay
Video Lecture length: 8:05 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

WEEK 31 – Unit 7: Differential Equations (continued) and Unit 8: Applications of Integration

ASSESSMENT PREPARATION:

Estimated time needed: 2 hours

❑ Unit 7 Practice Test

ASSESSMENT:

Estimated time needed: 1.5 hours

❑ Unit 7 Test

LEARNING & CONTENT OVERVIEW:

8.1.1 Finding the Average Value of a Function
Video Lecture length: 8:18 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

8.1.2 Antiderivatives and Motion
Video Lecture length: 19:51 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

WEEK 32 – Unit 8: Applications of Integration (continued)

LEARNING & CONTENT OVERVIEW:

8.1.3 Gravity and Vertical Motion
Video Lecture length: 18:22 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

8.1.4 Solving Vertical Motion Problems
Video Lecture length: 11:53 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

8.1.5 The Area between Two Curves
Video Lecture length: 9:04 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

8.1.6 Limits of Integration and Area
Video Lecture length: 15:16 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

WEEK 33 – Unit 8: Applications of Integration (continued)

LEARNING & CONTENT OVERVIEW:

8.1.7 Finding Areas by Integrating with Respect to *y*: Part One
Video Lecture length: 8:15 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

8.1.8 Finding Areas by Integrating with Respect to *y*: Part Two
Video Lecture length: 18:50 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

8.1.9 Area, Integration by Substitution, and Trigonometry
Video Lecture length: 11:43 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

8.1.10 Common Mistakes to Avoid When Finding Areas
Video Lecture length: 15:36 minutes

- ❑ Instruction: 1 Video Lecture
- ❑ Instruction: Notes
- ❑ Practice: Thinkwell Exercise

WEEK 34 – Unit 8: Applications of Integration (continued)

LEARNING & CONTENT OVERVIEW:

8.1.11 Regions Bound by Several Curves
Video Lecture length: 11:13 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

8.1.12 Finding Volumes Using Cross-Sectional Slices
Video Lecture length: 9:58 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

8.1.13 An Example of Finding Cross-Sectional Volumes
Video Lecture length: 12:02 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

8.1.14 Solids of Revolution
Video Lecture length: 11:50 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

8.1.15 The Disk Method along the *y*-Axis
Video Lecture length: 11:43 minutes

❑ Instruction: 1 Video Lecture
❑ Instruction: Notes
❑ Practice: Thinkwell Exercise

WEEK 35 – Unit 8: Applications of Integration (continued)

LEARNING & CONTENT OVERVIEW:

8.1.16 A Transcendental Example of the Disk Method
Video Lecture length: 9:39 minutes

- ☐ Instruction: 1 Video Lecture
- ☐ Instruction: Notes
- ☐ Practice: Thinkwell Exercise

8.1.17 The Washer Method across the *x*-Axis
Video Lecture length: 13:11 minutes

- ☐ Instruction: 1 Video Lecture
- ☐ Instruction: Notes
- ☐ Practice: Thinkwell Exercise

8.1.18 The Washer Method across the *y*-Axis
Video Lecture length: 13:11 minutes

- ☐ Instruction: 1 Video Lecture
- ☐ Instruction: Notes
- ☐ Practice: Thinkwell Exercise

ASSESSMENT PREPARATION:

Estimated time needed: 2 hours

- ☐ Unit 8 Practice Test

ASSESSMENT:

Estimated time needed: 1.5 hours

- ☐ Unit 8 Test

Estimated time needed: 105 minutes

❑ #1 Practice AP AB Exam - Part 1 (no calculator)

Estimated time needed: 75 minutes

❑ #1 Practice AP AB Exam - Part 2 (calculator)

Estimated time needed: 105 minutes

❑ #2 Practice AP AB Exam - Part 1 (no calculator)

Estimated time needed: 75 minutes

❑ #2 Practice AP AB Exam - Part 2 (calculator)