COVENANT CHRISTIAN SCHOOL

2011-2012

AP Calculus AB Course Overview

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AP® Calculus Curriculum Outline for the Academic Year 2011-2012

Welcome to AP® Calculus! This course may cause you some anxiety, some fear, or some dread. Perhaps it may cause all three reactions at the same time! But, while this course should be one of the most challenging courses you will take during your high school years, I assure you that each of you is well equipped to successfully complete this course and to successfully complete the AP® Calculus AB examination, which will be held in May 2012. It will require diligent and meticulous work on your part, as well as dogged determination to master the concepts and methods. AP® Calculus AB will be a ***demanding*** course, but each of you has the ability to successfully complete this course and earn the perfect score of 5 on the AP® Calculus AB examination. Our motto will be "Strive for 5!"

Calculus is intimidating to all students taking it for the first time. You are no different than students who have preceded you. But remember, if they could do it, and many did quite successfully, you can to. Calculus deals with two broad topics which have vast implications: change and motion. That's it. Calculus allows us to see, understand, and interpret physical phenomena dynamically and not statically. Calculus allows us to describe the change in motion of an arrow as it flies through the air and the change in demand of consumers in an economic study. Calculus allows us to understand the motion of planetary bodies in their orbits, and it allows us to understand the motion of a baseball. The study of calculus deals with two fundamental ideas: the derivative and the integral. Using these two ideas, a deeper understanding of change and motion which takes place throughout the physical world is opened to us.

In this course we will employ five techniques, or "rules" to solve problems and master the concepts behind the problems. The five "rules" are analytic, algebraic, numerical, graphical, and verbal. We will obtain solutions to problems algebraically or analytically, support our results graphically or numerically, and then interpret the results orally or in writing. To this end, the different types of exercises presented in our text book that we will encounter are:

- Algebraic and analytic manipulation
- Interpretation of graphs
- Graphical representation
- Numerical representations
- Explorations
- Writing to learn
- Group activities
- Data analyses

- Descriptively titled applications
- Extending the ideas

At the end of this course you should be able to[1]:

- Work with functions represented in a variety of ways: graphical, numerical, analytical, or verbal. They should understand the connections among these representations.
- Understand the meaning of the derivative in terms of a rate of change and local linear approximation and they should be able to use derivatives to solve a variety of problems.
- Understand the meaning of the definite integral both as a limit of Riemann sums and as the net accumulation of change and should be able to use integrals to solve a variety of problems.
- Understand the relationship between the derivative and the definite integral as expressed in both parts of the Fundamental Theorem of Calculus.
- Communicate mathematics both orally and in well-written sentences and should be able to explain solutions to problems.
- Model a written description of a physical situation with a function, a differential equation, or an integral.
- Use technology to help solve problems, experiment, interpret results, and verify conclusions.
- Determine the reasonableness of solutions, including sign, size, relative accuracy, and units of measurement.
- Develop an appreciation of calculus as a coherent body of knowledge and as a human accomplishment.

Our primary textbook for this course is **CALCULUS: GRAPHICAL, NUMERICAL, ALGEBRAIC** by Ross L. Finney, Franklin D. Demana, Bert K. Watts, and Daniel Kennedy, revised in 2003 and published by Pearson Education, Inc. I will supplement your textbook from time to time with additional material.

I am providing you with three resources for your information and planning purposes. Your first resource is the "AP® Calculus AB Course Objectives," contained on pages 6 through 12. You can use the objectives, listed by the sections of our textbook, to measure your progress of in your understanding of the material. The second resource appears on pages 13 through 17 and presents the list of "AP® Calculus AB Correlations." This section provides you the list of topics we will cover during the year and the corresponding page numbers in our textbook that correlate to that specific topic. This resource will serve you as a quick reference when finding the textbook pages that speak to a particular topic. The third resource, presented on pages 18 through 24, I am providing you the "AP® Calculus AB Assignments." This resource lists your assignments by quarter and provides you the chapter sections and problems that we will be working through during the

[1] http://www.collegeboard.com/student/testing/ap/sub_calab.html?calcab

coming year. The approximate number of days per topic is provided. The specific dates for topics and the due dates for problem assignments will be provided to you separately in a spreadsheet format as the year progresses. During our first class I will also provide each of you a handout entitled "TI 89/TI 92 Plus Calculus Tools." This resource will augment your TI 89 owner's manual.

We will meet seventh period each day, and we will devote additional time outside of school hours as necessary. The important thing for you to remember is not to become discouraged if you do not immediately grasp the concepts presented. With patience and hard work, you will persevere and be successful.

Please keep these references near at hand during the year; we will refer to them frequently.

"Calculus need not be made easy, it is easy."

Jaime Escalante

AP® Calculus AB Course Objectives

The following objectives, listed by section as presented in the textbook, for the AP® Calculus AB course are provided for your use.

1. Prerequisites for Calculus
   - 1.1. Lines
     - 1.1.1. Students will be able to use increments to calculate slopes
     - 1.1.2. Students will be able to write an equation and sketch a graph of a line given specific information
     - 1.1.3. Students will be able to identify the relationships between parallel lines and slopes
     - 1.1.4. Students will be able to linear regression equations to solve problems
   - 1.2. Functions and graphs
     - 1.2.1. Students will be able to identify the domain and range of a function using its graph or equation
     - 1.2.2. Students will be able to recognize even functions and odd functions using equations and graphs
     - 1.2.3. Students will be able to interpret and find formulas for piecewise defined functions
     - 1.2.4. Students will be able to write and evaluate compositions of two functions
   - 1.3. Exponential Functions
     - 1.3.1. Students will be able to determine domain, range, and graph of an exponential function
     - 1.3.2. Students will be able to solve problems involving exponential growth and decay
     - 1.3.3. Students will be able to use exponential regression equations to solve problems
   - 1.4. Parametric Equations
     - 1.4.1. Students will be able to graph curves that are described using parametric equations

1.4.2. Students will be able to find parametrizations of circles, ellipses, line segments, and other curves

1.5. Functions and Logarithms

1.5.1. Students will be able to identify a one-to-one function

1.5.2. Students will be able to determine the algebraic representation and the graphical representation of a function and its inverse

1.5.3. Students will be able to use parametric equations to graph inverse functions

1.5.4. Students will be able to apply the properties of logarithms

1.5.5. Students will be able to use logarithmic regression equations to solve problems

1.6. Trigonometric Functions

1.6.1. Students will be able to convert between radians and degrees, and find arc length

1.6.2. Students will be able to identify the periodicity and even-odd properties of the trigonometric functions

1.6.3. Students will be able to generate the graphs of trigonometric functions and explore various transformations upon these graphs

1.6.4. Students will be able to use the inverse trigonometric functions to solve problems

2. Limits and Continuity

2.1. Rates of Change and Limits

2.1.1. Students will be able to calculate average and instantaneous speeds

2.1.2. Students will be able to define and calculate limits for function values and apply the properties of limits

2.1.3. Students will be able to use the Sandwich Theorem to find certain limits directly

2.2. Limits Involving Infinity

2.2.1. Students will be able to find and verify end behavior models for various functions

2.2.2. Students will be able to calculate limits as and to identify vertical and horizontal asymptotes

2.3. Continuity

2.3.1. Students will be able to identify the intervals upon which a given function is continuous and understand the meaning of a continuous function

2.3.2. Students will be able to remove removable discontinuities by extending or modifying a function

2.3.3. Students will be able to apply the Intermediate Value Theorem and the properties of algebraic combinations and composites of continuous functions

2.4. Rates of Change and Tangent Lines

2.4.1. Students will be able to apply directly the definition of the slope of a curve in order to calculate slopes

2.4.2. Students will be able to find the equations of the tangent line and normal line to a curve at a given point

2.4.3. Students will be able to find the average rate of change of a function

3. Derivatives

3.1. Derivative of a Function

3.1.1. Students will be able to calculate slopes and derivatives using the definition of the derivative

3.1.2. Students will be able to graph from the graph of , graph from the graph of , and graph the derivative of a function given numerically with data

3.2. Differentiability

3.2.1. Students will be able to find where a function is not differentiable and distinguish between corners, cusps, discontinuities, and vertical tangents

3.2.2. Students will be able to approximate derivatives numerically and graphically

3.3. Rules for Differentiation

3.3.1. Students will be able to use the rules of differentiation to calculate derivatives, including second and higher order derivatives

3.4. Velocity and Other Rates of Change
    3.4.1. Students will be able to use derivatives to analyze straight line motion and solve other problems involving rates of change
3.5. Derivatives of Trigonometric Functions
    3.5.1. Students will be able to use the rules for differentiating the six basic trigonometric functions
3.6. Chain Rule
    3.6.1. Students will be able to differentiate composite functions using the Chain Rule
    3.6.2. Students will be able to find slopes of parametrized curves
3.7. Implicit Differentiation
    3.7.1. Students will be able to find derivatives using implicit differentiation
    3.7.2. Students will be able to find derivatives using the Power Rule for Rational Powers of
3.8. Derivatives of Inverse Trigonometric Functions
    3.8.1. Students will be able to calculate derivatives of functions involving the inverse trigonometric functions
3.9. Derivatives of Exponential and Logarithmic Functions
    3.9.1. Students will be able to calculate derivatives of exponential and logarithmic functions

4. Applications of Derivatives
4.1. Extreme Values of Functions
    4.1.1. Students will be able to determine the local or global extreme values of a function
4.2. Mean Value Theorem
    4.2.1. Students will be able to apply the Mean Value Theorem and to find the intervals on which a function is increasing or decreasing
4.3. Connecting and with the Graph of
    4.3.1. Students will be able to use the First and Second Derivative Tests to determine the local extreme values of a function

4.3.2. Students will be able to determine the concavity of a function and locate the points of inflection by analyzing the second derivative

4.3.3. Students will be able to graph using information of

4.4. Modeling and Optimization

4.4.1. Students will be able to solve application problems involving finding minimum or maximum values of a function

4.5. Linearization and Newton's Method

4.5.1. Students will be able to find linearizations and use Newton's Method to approximate the zeros of a function

4.5.2. Students will be able to estimate the change in a function using differentials

4.6. Related Rates

4.6.1. Students will be able to solve related rate problems

5. The Definite Integral

5.1. Estimating with Finite Sums

5.1.1. Students will be able to approximate the area under the graph of a nonnegative continuous function by using rectangle approximation methods

5.1.2. Students will be able to interpret the area under a graph as a net accumulation of a rate of change

5.2. Definite Integrals

5.2.1. Students will be able to express the area under a curve as a definite integral and as a limit of Riemann sums

5.2.2. Students will be able to compute the area under a curve using a numerical integration procedure

5.3. Definite Integrals and Antiderivatives

5.3.1. Students will be able to apply rules for definite integrals and find the average value of a function over a closed interval

5.4. Fundamental Theorem of Calculus

5.4.1. Students will be able to apply the Fundamental Theorem of Calculus

5.4.2. Students will understand the relationship between the derivative and the definite integral as expressed in both parts of the Fundamental Theorem of Calculus

5.5. Trapezoidal Rule

5.5.1. Students will be able to approximate the definite integral by using the Trapezoidal Rule and by using Simpson's Rule, and estimate the error in using the Trapezoidal and Simpson's Rules

6. Differential Equations and Mathematical Modeling

6.1. Antiderivatives and Slope Fields

6.1.1. Students will be able to construct antiderivatives using the Fundamental Theorem of Calculus

6.1.2. Students will be able to find the antiderivatives of polynomials, , and selected trigonometric functions of , as well as linear combinations of these functions

6.1.3. Students will be able to solve initial value problems of the form

—

6.1.4. Students will be able to construct slope fields using technology and interpret slope fields as visualization of differential equations

6.2. Integration by Substitution

6.2.1. Students will be able to compute indefinite and definite integrals by the method of substitution

6.2.2. Students will be able to solve a differential equation of the form — , in which the variables are separable

6.3. Integration by Parts

6.3.1. Students will be able to use integration by parts to evaluate indefinite and definite integrals

6.3.2. Students will be able to use tabular integration or the method of solving for the unknown integral in order to evaluate integrals that require repeated use of integration by parts

6.4. Exponential Growth and Decay

6.4.1. Students will be able to solve problems involving exponential growth and decay in a variety of applications

6.5. Population Growth

6.5.1. Students will be able to solve problems involving exponential or logistic population growth

6.6. Numerical Methods

6.6.1. Students will be able to use Euler's Method and the improved Euler's Method to find approximate solutions to differential equations with initial values

7. Applications of Definite Integrals

7.1. Integral as Net Change

7.1.1. Students will be able to solve problems in which a rate is integrated to find the net change over time in a variety of applications

7.2. Areas in the Plane

7.2.1. Students will be able to use integration to calculate areas of regions in a plane

7.3. Volumes

7.3.1. Students will be able to use integration (by slices or shells) to calculate the volumes of solids

7.3.2. Students will be able to use integration to calculate surface areas of solids of revolutions

7.4. Lengths of Curves

7.4.1. Students will be able to use integration to calculate lengths of curves in a plane

7.5. Applications from Science and Statistics

7.5.1. Students will be able to adapt their knowledge of integral calculus to model problems involving rates of change in a variety of applications, possibly in unfamiliar contexts

AP® Calculus AB Correlations

A. Functions, Graphs, and Limits

Topic	Pages
1) Analysis of graphs	Throughout
2) Limits of functions (including one-sided functions)	
a) Calculating limits using algebra	57-59, 61
b) Estimating limits from graphs or tables of data	56-57, 59-61, 65-66, 71, 74-78, 135, 419-422
3) Asymptotic and unbounded behavior	
a) Understanding asymptotes in terms of graphical behavior	65-66, 69-71
b) Describing asymptotic behavior in terms of limits involving infinity	65-71
c) Comparing relative magnitudes of functions and their rates of change	69-71, 425-430
4) Continuity as a property of functions	
a) Understanding continuity in terms of limits	74-78
b) Geometric understanding of graphs of continuous functions (Intermediate Value Theorem and Extreme Value Theorem)	73-79, 177-179

B. Derivatives

1) Concept of the Derivative	
a) Derivatives defined as the limit of the difference quotient	95-97, 100, 105-106, 113-116, 135, 164, 277-278

b) Relationship between differentiability and continuity	106, 109-110
2) Derivative at a point	
a) Slope of a curve at a point	83-86, 95, 97-98, 114-115, 118, 124, 138-139, 144-145, 150-151, 157-158, 162, 165-167, 187, 398
b) Tangent line to a curve at a point and local linear approximation	83-86, 106-107, 114-115, 118, 124, 138-139, 144-145, 150-152, 157-158, 162, 165-167, 187, 398
c) Instantaneous rate of change as the limit of average rate of change	55-56, 82-83, 86-87, 122, 124, 128
d) Approximate rate of change from graphs and tables of values	82-83, 98-100
3) Derivative as a function	
a) Corresponding characteristics of and	97-98, 188-189, 194-197, 199, 201-203
b) Relationship between the increasing and decreasing behavior of *f* and the sign of	187-189, 194-197, 199, 201-203
c) The Mean Value Theorem and its geometric consequences	186-190
d) Equations involving derivatives	122-123, 126, 190-191, 233-236, 304-305, 309-312, 330-331, 333, 335, 342-346
4) Second derivatives	
a) Corresponding characteristics of the graphs of and	197-203
b) Relationship between and the sign of	197-199, 201-202
c) Points of inflections as places where concavity changes	198-203

5) Applications of derivatives

a) Analysis of curves	179-183, 187-189, 194-203
b) Optimization, both absolute (global) and relative (local) extrema	177, 179-183, 194-197, 200-203, 206-213
c) Modeling rates of change, including related rates problems	232-236
d) Use of implicit differentiation to find the derivatives of inverse functions	158-160, 166, 169
e) Interpretation of derivative as a rate of change in varied applied contexts, including velocity, speed, and acceleration	122-129, 136-137, 143, 160, 164-166, 187, 190-191, 198-200, 232-236, 304, 309-312, 330-337, 342-346

6) Computation of derivatives

a) Knowledge of derivatives of basic functions, including , exponential, trigonometric, and inverse trigonometric functions	112-113, 117-118, 134-136, 138, 153-154, 157-161, 163-169
b) Basic rules for the derivative of sums, products, and quotients of functions	113-118, 136
c) Chain rule and implicit differentiation	141-146, 149-154, 168

C. Integrals

1) Riemann Sums

a) Concept of a Riemann sum over equal subdivisions	247-253, 260-262, 264-265, 271, 364-370, 374-375, 383, 387, 395-397, 402-404
b) Computations of Riemann sums using left, right, and midpoint evaluations	248-253

2) Interpretations and properties of definite integrals	
a) Definite integral as a limit of Riemann sums	258-265, 271, 364-370, 374-375, 383, 387, 395-397, 402-404
b) Definite integral of the rate of change of a quantity over an interval interpreted as the change of the quantity over the interval:	363-370
c) Basic properties of definite integrals	268-270
3) Applications of integrals	262-263, 265, 270-272, 283-285, 309-312, 325, 363-370, 374-379, 383-389, 395-398, 401-407, 440-441
4) Fundamental Theorem of Calculus	
a) Use of the Fundamental Theorem to evaluate definite integrals	282-285, and throughout from here on
b) Use of the Fundamental Theorem to represent a particular antiderivative, and the analytical and graphical analysis of functions so defined	272-274 (exploratory), 277-282, 308, 316
5) Techniques of antidifferentiation	
a) Antiderivatives following directly from derivatives of basic functions	190-191, 286-285, 307-309
b) Antiderivatives by substitution of variables, including a change of limits for definite integrals	315-320

6) Applications of antidifferentiation	
a) Finding specific antiderivatives using initial conditions, including applications to motion along a line	190-191, 280, 303, 309-312, 363-365, 367
b) Solving separable differential equations and using them in modeling	304-305, 320-321, 330-337, 342-346, exponential growth in precalculus framework 20-23
7) Numerical approximations to definite integrals	247-253, 265-266 (numerical integration using calculator occurs throughout from here on), 289-294

AP® Calculus AB Assignments for First Quarter

1. Prerequisites of Calculus
   - 1.1. Lines—one day
     - 1.1.1. Exercises: 3-36 multiples of 3, 37, 39, 43, 49
   - 1.2. Functions and graphs—two days
     - 1.2.1. Exercises: 3-33 multiples of 3, 35, 36, 39. 42, 45, 49, 53, 57, 63, 65, 66
   - 1.3. Exponential Functions—one day
     - 1.3.1. Exercises: 3-21 multiples of 3, 22, 23-29, 34, 38
   - 1.4. Parametric Functions—two days
     - 1.4.1. Exercises: 3, 6, 7-27 odd, 30, 42
   - 1.5. Functions and Logarithms—one day
     - 1.5.1. Exercises: 3-42 multiples of 3, 43, 48, 50
   - 1.6. Trigonometric Functions—two days
     - 1.6.1. Exercise: 2-34 even, 38, 45
   - 1.7. Review—one day
   - 1.8. Test 1—one day
2. Limits and Continuity
   - 2.1. Rates of Change and Limits—two days
     - 2.1.1. Exercises: 3-30 multiples of 3, 32, 35, 39, 42, 44, 45, 48, 49, 55, 58
     - 2.1.2. Preparation for AP Exam Exercises: 45-52
   - 2.2. Limits Involving Infinity
     - 2.2.1. Exercises: 3-48 multiples of 3, 54, 57, 59
     - 2.2.2. Preparation for AP Exam Exercises: 47, 48
   - 2.3. Continuity—two days
     - 2.3.1. Exercises: 2-30 even, 36, 39, 42, 48
     - 2.3.2. Preparation for AP Exam Exercises: 25, 26, 30, 32, 41
   - 2.4. Rates of Change and Tangent Lines—two days
     - 2.4.1. Exercises: 1-33 odd
     - 2.4.2. Preparation for AP Exam Exercises: 29, 41, 42
   - 2.5. Review—one day

2.6. Test 2—one day

3. Derivatives
   - 3.1. Derivative of a Function—three days
     - 3.1.1. Exercises: 1-6, 7-25 odd
     - 3.1.2. Preparation for AP Exam Exercises 21, 25, 26
   - 3.2. Differentiability—three days
     - 3.2.1. Exercises: 1-17 odd, 18-23
     - 3.2.2. Preparation for AP Exam Exercises: 29, 31
   - 3.3. Rules for Differentiation—three days
     - 3.3.1. Exercises: 1-33 odd, 34
     - 3.3.2. Preparation for AP Exam Exercises: 28, 30
   - 3.4. Velocity and Other Rates of Change—three days
     - 3.4.1. Exercises: 1, 2, 4, 5, 10, 13, 14, 16, 24, 25, 27, 29, 30, 31, 33, 37, 38
     - 3.4.2. Preparation for AP Exam Exercises: 16, 21, 23-26, 29, 36
   - 3.5. Derivatives of Trigonometric Functions—three days
     - 3.5.1. Exercises: 1-10, 12-22 even, 25, 27, 29, 33
     - 3.5.2. Preparation for AP Exam Exercises: 20, 27, 31
   - 3.6. Chain Rule—three days
     - 3.6.1. Exercises: 3-69 multiples of 3
     - 3.6.2. Preparation for AP Exam Exercises: 50, 57, 61, 64
   - 3.7. Implicit Differentiation—two days
     - 3.7.1. Exercises: 3-45 multiples of 3, 46, 50
     - 3.7.2. Preparation for AP Exam Exercises: 40-42, 48
   - 3.8. Derivatives of Inverse Trigonometric Functions—three days
     - 3.8.1. Exercises: 1-17 odd, 21, 24, 27, 30
     - 3.8.2. Preparation for AP Exam Exercises: 21-23

AP® Calculus AB Assignments for Second Quarter

3.9. Derivative of Exponential and Logarithmic Functions—three days

3.9.1. Exercises: 1-41 odd, 47, 48, 50, 52

3.9.2. Preparation for AP Exam Exercises: 49, 53

3.10. Review—two days

3.10.1. Preparation for AP Exam Exercises: 59-67, 70, 78

3.11. Test 3—one day

4. Applications of Derivatives

4.1. Extreme Values of Functions—five days

4.1.1. Exercises: 1-9 odd, 11-30, 37-45 odd, 48, 49, 52

4.1.2. Preparation for AP Exam Exercises: 35, 36, 45-49

4.2. Mean Value Theorem—two days

4.2.1. Exercises: 3-33 multiples of 3, 39, 42, 43, 45, 48, 52

4.2.2. Preparation for AP Exam Exercises: 43

4.3. Connecting and with the Graph of

4.3.1. Exercises: 1-29 odd, 37, 40, 42-46, 48

4.3.2. Preparation for AP Exam Exercises: 3-6, 33, 34, 41, 42, 50

4.4. Modeling and Optimization—four days

4.4.1. Exercises: 1, 5, 8, 9, 12, 17, 19, 20, 26, 31, 35, 36, 38, 40, 41, 43, 45, 46, 49, 50

4.4.2. Preparation for AP Exam Exercises: 41, 45-50

4.5. Linearization and Newton's Method—three days

4.5.1. Exercises: 3, 5-9, 11, 14, 15, 18, 19, 22, 25, 27, 30, 33, 36, 39, 44, 50, 51

4.5.2. Preparation for AP Exam Exercises: 37, 46

4.6. Related Rates

4.6.1. Exercises: 3, 6, 9, 12, 13, 15, 18, 21, 22, 24-39 multiples of 3

4.6.2. Preparation for AP Exam Exercises: 23, 34, 39, 40

4.7. Review—three days

4.8. Test 4—one day

5. The Definite Integral
    5.1. Estimating with Finite Sums—three days
        5.1.1. Exercises: 1-4, 6, 9, 12, 14, 15, 18, 20, 21, 24, 26
        5.1.2. Preparation for AP Exam Exercises: 24
    5.2. Definite Integrals—four days
        5.2.1. Exercises: 1, 3-27 multiples of 3, 39-41, 43, 46, 47
        5.2.2. Preparation for AP Exam Exercises: 43-46
    5.3. Definite Integrals and Antiderivatives—eight days
        5.3.1. Exercises: 1, 3, 4, 6, 7-17, 20, 21, 24, 25, 28, 29, 32, 36, 38, 40, 43, 44
        5.3.2. Preparation for AP Exam Exercises: 2, 4, 29, 33-35

AP® Calculus AB Assignments for Third Quarter

5.4. Fundamental Theorem of Calculus—five days

5.4.1. Exercises: 1-13 odd, 47, 15-48 multiples of 3, 39-41, 43, 46

5.4.2. Preparation for AP Exam Exercises: 53-56, 60, 64

5.5. Trapezoidal Rule—three days

5.5.1. Exercises: 1, 4, 6-8, 10, 11, 13, 16-18, 23

5.5.2. Preparation for AP Exam Exercises: 19

5.6. Review—two days

5.6.1. Preparation for AP Exam Exercises: 46, 51, 54

5.7. Test 5—one day

6. Differential Equations and Mathematical Modeling

6.1. Antiderivatives and Slope Fields—four days

6.1.1. Exercises: 3-24 multiples of 3, 25, 27-51 multiples of 3, 52, 61

6.1.2. Preparation for AP Exam Exercises: 49, 53-55, 57, 62

6.2. Integration by Substitution—six days

6.2.1. Exercises: 1-17 odd, 18-42 multiples of 3, 43, 44, 49

6.2.2. Preparation for AP Exam Exercises: 44, 45, 49

6.3. Integration by Parts—three days

6.3.1. Exercises: 3-33 multiples of 3

6.3.2. Preparation for AP Exam Exercises: 23-25

6.4. Exponential Growth and Decay—two days

6.4.1. Exercises: 1-9 odd, 12, 14, 15-33 multiples of 3

6.4.2. Preparation for AP Exam Exercises: 12, 17, 25, 27, 29

6.5. Population Growth—three days

6.5.1. Exercises: 1-29 odd

6.5.2. Preparation for AP Exam Exercises: 20, 21, 31, 32

6.6. Numerical Methods—three days

6.6.1. Exercises: 2, 3, 6, 7, 9, 12, 15, 17, 19, 22, 24, 25, 28

6.6.2. Preparation for AP Exam Exercises: 16

6.7. Review—two days

6.7.1. Preparation for AP Exam: 33, 34, 39, 52, 54

6.8. Test 6—one day

7. Applications of Definite Integral

7.1. Integral as Net Change—five days

7.1.1. Exercises: 1-17, 20-22, 24-27, 29, 31

7.1.2. Preparation for AP Exam Exercises: 12-16, 17, 19, 21-24

7.2. Areas in the Plane—three days

7.2.1. Exercises: 1-29 odd, 33, 36, 40, 42, 43, 46

7.2.2. Preparation for AP Exam Exercises: 36-38, 46

7.3. Volumes—three days

7.3.1. Exercises: 1-25 odd, 28, 29, 33, 39, 42, 44, 49, 53, 57, 60, 63

7.3.2. Preparation for AP Exam Exercises: 7, 12, 49-51

AP® Calculus AB Assignments for Fourth Quarter

7.4. Lengths of Curves

7.4.1. Exercises: 3-30 multiples of 3

7.4.2. Preparation for AP Exam Exercises: 19, 20, 25, 27, 29

7.5. Applications from Science and Statistics

7.5.1. Exercises: 1, 3, 5, 6, 8, 10, 12, 17, 21, 24-31, 33, 35, 37, 39

7.5.2. Preparation for AP Exam Exercises: 25

7.6. Review—two days

7.6.1. Preparation for AP Exam Exercises: 2, 3, 5, 15, 17, 19, 24, 30-31, 39

7.7. Test 7—one day

8. AP Test Preparation—20 days
9. AP Calculus AB Test—May 9, 2012 at 8:00 am