Calculus AB Schedule--Unit 5 (Chapter 6) The Definite Integral

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 16	*7-Dec*	*8-Dec*	*9-Dec*	*10-Dec*	*11-Dec*
Lesson	6.1 Area	6.1 Area	**EARLY DISMISSAL** 6.1 Area	6.2 The Definite Integral	6.2 The Definite Integral
HMWK	**HW1**--p.430 #2,3, (make tables of values) 5ab, p.447 #11,12,14, p.449 AP Practice #1	**HW**2--p.431 #8, p.450 AP Practice #11a, 12ab, 13ab, p.510 AP Review #12, p.512 AP Cumulative Review #3,10 *December IML Math Contest after school*	**HW3**--p.431 #7, p.447 #2, p.449 AP Practice #3,5,8	**HW4**--p.447 #17,27-30, p.450 AP Practice #10bc, 11b	**HW5**--Definite Integrals HW Handout

Week 17	*14-Dec*	*15-Dec*	*16-Dec*	*17-Dec*	*18-Dec*
Lesson	*Practice for AP Practice Exam / Calculus Holiday Songs*	*Practice for AP Practice Exam*	**FINAL EXAMS** (4th @ 8am, 2nd @ 9:40am, 1st @11:20am)	**FINAL EXAMS** (5th @ 8am, 3rd @ 9:40am, 0 @11:20am)	**FINAL EXAMS** (6th @ 8am, 7th @ 9:40am)
HMWK	**STUDY!!!!**	**STUDY!!!!**	**STUDY!!!!**	**STUDY!!!!**	**No Additional Homework**

Week 17	*4-Jan*	*5-Jan*	*6-Jan*	*7-Jan*	*8-Jan*
Lesson	**NO SCHOOL** -- Teacher Institute Day	Go Over Final Exam/AP Practice Exam	6.4 Properties of the Definite Integral	6.5 Indefinite Integral	6.5 Indefinite Integral **Quiz 6.1, 6.2 & 6.4**
HMWK	**No Additional Homework**	**HW7**--p.474 #1,2, 3,4,11, p.479 AP Practice #7,14	**HW6**--p.447 #15,16, p.474 #9, p.479 AP Practice #1,3,11,16	**HW8**--p.492 #9, 10,11,12,13, p.496 AP Practice #1 **Study for Quiz 6.1, 6.2 & 6.4**	**HW9**--AP M/C & FRQ Questions Handout

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	Monday	Tuesday	Wednesday	Thursday	Friday
Week 18	*11-Jan*	*12-Jan*	*13-Jan*	*14-Jan*	*15-Jan*
Lesson	6.3 Fundamental Theorem of Calculus	6.3 Fundamental Theorem of Calculus	**EARLY DISMISSAL** 6.5 Method of Substitution	6.5 Method of Substitution	6.5 Method of Substitution **Quiz 6.5 & 6.3**
HMWK	**HW10**--p.461 #19, 22,27,29,35,37, p.475 #17,21 (check all answers with Calculator)	**HW11**--p.461 #23, 26,28,31,33,36, p.475 #18, 23 (check all answers with Calculator) *January IML Math Contest after school*	**HW12**--p.492 #21-27,49	**HW13**--p.492 #29, 30,31,37,40,53, p.496 AP Practice #6,7,13 **Study for Quiz 6.5 & 6.3**	**HW14**--p.493 #63b,71,73,79,96, p.496 AP Practice #4,8 (check all answers with Calculator)
Week 19	*18-Jan*	*19-Jan*	*20-Jan*	*21-Jan*	*22-Jan*
Lesson	**NO SCHOOL** -- M.L. King, Jr B-day	6.5 Method of Substitution	**EARLY DISMISSAL** 6.4 MVT for Integrals & Average Value	6.3 Fundamental Theorem of Calculus	6.3 Fundamental Theorem of Calculus
HMWK	**No Additional Homework**	**HW15**--p.493 #62b,75,130, 132ab (check all answers with Calculator), Calculator p.493 #95	**HW16**--p.476 #67,77b, p.479 AP Practice #2, p.494 #101, p.496 AP Practice #9, Calculator p.476 #90	**HW17**--p.461 #5,7,11,15,17, p.463 AP Practice #6,7	**HW18**--p.461 #13,18, p.464 AP Practice #9,10,14, Calculator p.462 #63ab, p.464 AP Practice #13
Week 20	*25-Jan*	*26-Jan*	*27-Jan*	*28-Jan*	*29-Jan*
Lesson	6.1 Trapezoid Sums	6.1 Trapezoid Sums	**EARLY DISMISSAL** *Unit 5 Review (Book Chapter 6)*	*Unit 5 Review (Book Chapter 6)*	**Unit 5 TEST**
HMWK	**HW19**--p.447 #13, p.509 #64, p.511 AP Practice #14, 16	**HW20**--p.448 #31bc,32bc, AP Practice #2, 5,10a,12cd,13c	**HW21**--Unit 6 AP Progress Check (Part A, skip #5,6,7, Part C, skip #7,8,9)	**STUDY for TEST!!!**	**No Additional Homework**

Week 21	*1-Feb*
Lesson	AP Activity: Unit 5 (Book Chapter 6)
HMWK	*AP Activity: Unit 5 due Feb 8*

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UNIT 5: Definite Integrals

CHA-4
Definite integrals allow us to solve problems involving the accumulation of change over an interval.

LEARNING OBJECTIVE	ESSENTIAL KNOWLEDGE
CHA-4.A Interpret the meaning of areas associated with the graph of a rate of change in context.	**CHA-4.A.1** The area of the region between the graph of a rate of change function and the x axis gives the accumulation of change.
	CHA-4.A.2 In some cases, accumulation of change can be evaluated by using geometry.
	CHA-4.A.3 If a rate of change is positive (negative) over an interval, then the accumulated change is positive (negative).
	CHA-4.A.4 The unit for the area of a region defined by rate of change is the unit for the rate of change multiplied by the unit for the independent variable.

FUN-5
The Fundamental Theorem of Calculus connects differentiation and integration.

LEARNING OBJECTIVE	ESSENTIAL KNOWLEDGE
FUN-5.A Represent accumulation functions using definite integrals.	**FUN-5.A.1** The definite integral can be used to define new functions.
	FUN-5.A.2 If f is a continuous function on an interval containing a, then $\frac{d}{dx}\left(\int_a^x f(t)dt\right) = f(x)$, where x is in the interval.
FUN-5.A Represent accumulation functions using definite integrals.	**FUN-5.A.3** Graphical, numerical, analytical, and verbal representations of a function f provide information about the function g defined as $g(x) = \int_a^x f(t)dt$.

LIM-5
Definite integrals can be approximated using geometric and numerical methods.

LEARNING OBJECTIVE	ESSENTIAL KNOWLEDGE
LIM-5.A Approximate a definite integral using geometric and numerical methods.	**LIM-5.A.1** Definite integrals can be approximated for functions that are represented graphically, numerically, analytically, and verbally.
	LIM-5.A.2 Definite integrals can be approximated using a left Riemann sum, a right Riemann sum, a midpoint Riemann sum, or a trapezoidal sum; approximations can be computed using either uniform or nonuniform partitions.
	LIM-5.A.3 Definite integrals can be approximated using numerical methods, with or without technology.
	LIM-5.A.4 Depending on the behavior of a function, it may be possible to determine whether an approximation for a definite integral is an underestimate or overestimate for the value of the definite integral.
LIM-5.B Interpret the limiting case of the Riemann sum as a definite integral.	**LIM-5.B.1** The limit of an approximating Riemann sum can be interpreted as a definite integral.
	LIM-5.B.2 A Riemann sum, which requires a partition of an interval I, is the sum of products, each of which is the value of the function at a point in a subinterval multiplied by the length of that subinterval of the partition.
LIM-5.C Represent the limiting case of the Riemann sum as a definite integral.	**LIM-5.C.1** The definite integral of a continuous function f over the interval $[a, b]$, denoted by $\int_a^b f(x)dx$, is the limit of Riemann sums as the widths of the subintervals approach 0. That is, $\int_a^b f(x)dx = \lim_{\max \Delta x_i \to 0} \sum_{i=1}^{n} f(x_i^*)\Delta x_i$, where n is the number of subintervals, Δx_i is the width of the ith subinterval, and x_i^* is a value in the ith subinterval.
	LIM-5.C.2 A definite integral can be translated into the limit of a related Riemann sum, and the limit of a Riemann sum can be written as a definite integral.

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FUN-6
Recognizing opportunities to apply knowledge of geometry and mathematical rules can simplify integration.

LEARNING OBJECTIVE	ESSENTIAL KNOWLEDGE
FUN-6.A Calculate a definite integral using areas and properties of definite integrals.	**FUN-6.A.1** In some cases, a definite integral can be evaluated by using geometry and the connection between the definite integral and area. **FUN-6.A.2** Properties of definite integrals include the integral of a constant times a function, the integral of the sum of two functions, reversal of limits of integration, and the integral of a function over adjacent intervals. **FUN-6.A.3** The definition of the definite integral may be extended to functions with removable or jump discontinuities.
FUN-6.B Evaluate definite integrals analytically using the Fundamental Theorem of Calculus.	**FUN-6.B.1** An antiderivative of a function f is a function g whose derivative is f. **FUN-6.B.2** If a function f is continuous on an interval containing a, the function defined by $F(x)=\int_a^x f(t)dt$ is an antiderivative of f for x in the interval. **FUN-6.B.3** If f is continuous on the interval $[a, b]$ and F is an antiderivative of f, then $\int_a^b f(x)dx = F(b)-F(a)$.
FUN-6.C Determine antiderivatives of functions and indefinite integrals, using knowledge of derivatives.	**FUN-6.C.1** $\int f(x)dx$ is an indefinite integral of the function f and can be expressed as $\int f(x)dx = F(x)+C$, where $F'(x)=f(x)$ and C is any constant. **FUN-6.C.2** Differentiation rules provide the foundation for finding antiderivatives. **FUN-6.C.3** Many functions do not have closed-form antiderivatives.
FUN-6.D For integrands requiring substitution or rearrangements into equivalent forms: (a) Determine indefinite integrals. (b) Evaluate definite integrals.	**FUN-6.D.1** Substitution of variables is a technique for finding antiderivatives. **FUN-6.D.2** For a definite integral, substitution of variables requires corresponding changes to the limits of integration.
FUN-6.D For integrands requiring substitution or rearrangements into equivalent forms: (a) Determine indefinite integrals. (b) Evaluate definite integrals.	**FUN-6.D.3** Techniques for finding antiderivatives include rearrangements into equivalent forms, such as long division and completing the square.