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

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 15			*6-Dec*	*7-Dec*	*8-Dec*
Lesson			6.1 Area, 6.11 Midpoint Rule	6.1 Area, 6.11 Midpoint Rule	6.1 Area, 6.11 Midpoint Rule
HMWK			**HW1**--p.396 #2,3, (make tables of values) 5ab, p.411 AP Practice #1, 10a, p.514 #5, Calculator p.515 #26ab,27	**HW2**--p.410 #63, 66, p.411 #9a, p.461 AP Practice #10, p.514 #6, Calculator p.515 #28	**HW3**--p.410 #64, AP Practice #5, p.516 AP Practice #5, Calculator p.516 #35c

Week 16	*11-Dec*	*12-Dec*	*13-Dec*	*14-Dec*	*15-Dec*
Lesson	6.2 The Definite Integral	***LATE START*** 6.2 The Definite Integral	6.4 Properties of the Definite Integral	*Practice for AP Practice Exam*	*Practice for AP Practice Exam / Calculus Holiday Songs*
HMWK	**HW4**--p.408 #13, 14,17,27-30, p.412 AP Practice #10bd	**HW5**--Definite Integrals HW Handout *December IML Math Contest after school?*	**HW6**--p.408 #15, 16, p.432 #9, p.437 AP Practice #1,3,11, p.460 AP Practice #14bc	**STUDY!!!!**	**STUDY!!!!**

Week 17	*18-Dec*	*19-Dec*	*20-Dec*	*21-Dec*	*22-Dec*
Lesson	**FINAL EXAMS** (1st @ 8:45am, 3rd @10:25am, Zero @ 12pm)	**FINAL EXAMS** (2nd @ 8:45am, 4th @ 10:25am)	**FINAL EXAMS** (6th @ 8:45am, 5th @ 10:25am)	**NO SCHOOL** -- Teacher Institute Day	**WINTER BREAK**
HMWK	**STUDY!!!!**	**STUDY!!!!**	**No Additional Homework**	**No Additional Homework**	**No Additional Homework**

Week 17	*8-Jan*	*9-Jan*	*10-Jan*	*11-Jan*	*12-Jan*
Lesson	Go Over Final Exam/AP Practice Exam	6.5 Indefinite Integral	6.5 Indefinite Integral	6.3 Fundamental Theorem of Calculus	6.3 Fundamental Theorem of Calculus **Quiz 6.1, 6.2 & 6.4**
HMWK	**HW7**--p.432 #1,2, 3,4,11, p.437 AP Practice #5,14	**HW8**--p.449 #9, 10,11,12,13, p.453 AP Practice #1	**HW9**--AP M/C & FRQ Questions Handout	**HW10**--p.420 #19, 22,27,29,35,37 (check all answers with Calculator) **Study for Quiz 6.1, 6.2 & 6.4**	**HW11**--p.420 #23, 26,28,31,33,36 (check all answers with Calculator)

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Week 18	*15-Jan*	*16-Jan*	*17-Jan*	*18-Jan*	*19-Jan*
Lesson	**NO SCHOOL** -- M.L. King, Jr B-day	***LATE START*** 6.5 Method of Substitution	6.5 Method of Substitution	6.5 Method of Substitution	6.5 Method of Substitution **Quiz 6.5 & 6.3**
HMWK	**No Additional Homework**	**HW12**--p.449 #21-27,49 *January IML Math Contest after school*	**HW13**--p.449 #29, 30,31,37,40,53, p.453 AP Practice #6,7,13	**HW14**--p.450 #63b,71,73,79,96, p.453 AP Practice #4,8 (check all answers with Calculator) **Study for Quiz 6.5 & 6.3**	**HW15**--p.450 #62b,75,130, 132ab (check all answers with Calculator), Calculator p.450 #95

Week 19	*22-Jan*	*23-Jan*	*24-Jan*	*25-Jan*	*26-Jan*
Lesson	6.4 MVT for Integrals & Average Value	**LATE START** 6.3 Fundamental Theorem of Calculus	6.3 Fundamental Theorem of Calculus	6.11 Trapezoid Sums	6.11 Trapezoid Sums
HMWK	**HW16**--p.434 #71, 81b, p.437 AP Practice #2, p.451 #101, p.454 AP Practice #9, Calculator p.434 #98	**HW17**--p.420 #5, 7,11,15,17, p.423 AP Practice #6,7	**HW18**--p.420 #13, 18, p.424 AP Practice #9,10,12, Calculator p.421 #63ab, p.424 AP Practice #11	**HW19**--p.514 #3, Calculator p.515 #9,25c,26c,30a	**HW20**--p.516 #31,32, AP Practice #1-4

Week 20	*29-Jan*	*30-Jan*	*31-Jan*	*1-Feb*
Lesson	*Unit 5 Review (Book Chapter 6)*	***LATE START*** *Unit 5 Review (Book Chapter 6)*	**Unit 5 TEST**	AP Activity: Unit 5 (Book Chapter 6)
HMWK	**HW21**--p.458 #9,15,19,23,32,41, 44, AP Practice #8,9,12, p.536 AP Review #3,5	**STUDY for TEST!!!**	**No Additional Homework**	*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.