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

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 11	*28-Oct*	*29-Oct*	*30-Oct*	*31-Oct*	*1-Nov*
Lesson		6.1 Area, 6.11 Midpoint Rule	**EARLY DISMISSAL** 6.1 Area, 6.11 Midpoint Rule	6.2 The Definite Integral	6.2 The Definite Integral
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.408 #13,14,17,27-30, p.412 AP Practice #10bd	**HW4**--Definite Integrals HW Handou

Week 12	*4-Nov*	*5-Nov*	*6-Nov*	*7-Nov*	*8-Nov*
Lesson	6.4 Properties of the Definite Integral	**NO SCHOOL** -- Election Day	6.5 Indefinite Integral	6.3 Fundamental Theorem of Calculus **Quiz 6.1, 6.2 & 6.4**	6.5 Method of Substitution
HMWK	**HW5**--p.408 #15,16, p.432 #9, p.437 AP Practice #1,3,11, p.460 AP Practice #14bc	**No Additional Homework**	**HW6**--p.449 #9, 10,11,12,13, p.453 AP Practice #1 **Study for Quiz 6.1, 6.2 & 6.4**	**HW7**--p.420 #19, 22,27,29,35,37 (check all answers with Calculator)	**HW8**--p.449 #21-27,49

Week 13	*11-Nov*	*12-Nov*	*13-Nov*	*14-Nov*	*15-Nov*
Lesson	6.5 Method of Substitution	6.5 Method of Substitution	**EARLY DISMISSAL** 6.6 Integration by Parts	6.6 Integration by Parts **Quiz 6.3 & 6.5**	6.10 Integration Using Partial Fractions
HMWK	**HW9**--p.449 #29, 30,31,37,40,53, p.453 AP Practice #6,7,13	**HW10**--p.450 #63b,71,73,79,96, p.453 AP Practice #4,8, p.696 AP Practice #3,4 (check all answers with Calculator) *November IML Math Contest after school*	**HW11**--p.471 #3,5,8,13,31 p.473 AP Practice #5,6 **Study for Quiz 6.3 & 6.5**	**HW12**--p.471 #41,46,51,53, p.473 AP Practice #4	**HW13**--p.502 #3,7,21,33,49, p.504 AP Practice #3

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	Monday	Tuesday	Wednesday	Thursday	Friday
Week 14	*18-Nov*	*19-Nov*	*20-Nov*	*21-Nov*	*22-Nov*
Lesson	6.4 MVT for Integrals & Average Value	6.3 Fundamental Theorem of Calculus	**EARLY DISMISSAL** 6.3 Fundamental Theorem of Calculus	6.11 Trapezoid Sums	6.11 Trapezoid Sums
HMWK	**HW14**--p.434 #71,81b, p.437 AP Practice #2, p.451 #101, p.454 AP Practice #9, Calculator p.434 #98	**HW15**--p.420 #5,7,11,15,17, p.423 AP Practice #6,7	**HW16**--p.420 #13,18, p.424 AP Practice #9,10,12, Calculator p.421 #63ab, p.424 AP Practice #11	**HW17**--p.514 #3, Calculator p.515 #9,25c,26c,30a	**HW18**--p.516 #31,32, AP Practice #1-4

Week 14	*25-Nov*	*26-Nov*	*27-Nov*	*28-Nov*	*29-Nov*
Lesson	*Unit 5 Review (Book Chapter 6)*	**Unit 5 Test (Book Chapter 6)**	**NO SCHOOL --** Day Before Turkey Day	**NO SCHOOL --** Turkey Day	***NO SCHOOL --*** *Day After Turkey Day*
HMWK	**HW19**--p.458 #9,15,19,23,32,41, 44, AP Practice #8,9,12, p.535 #25,27, p.536 AP Review #3,5,6	**No Additional Homework**	**No Additional Homework**	**No Additional Homework**	**No Additional Homework**

Week 15	*2-Dec*
Lesson	AP Activity: Unit 5 (Book Chapter 6)
HMWK	*AP Activity: Unit 5 due Dec 9*

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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.

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.
FUN-6.E For integrands requiring integration by parts: (a) Determine indefinite integrals. BC ONLY (b) Evaluate definite integrals. BC ONLY	**FUN-6.E.1** Integration by parts is a technique for finding antiderivatives. BC ONLY
FUN-6.F For integrands requiring integration by linear partial fractions: (a) Determine indefinite integrals. BC ONLY (b) Evaluate definite integrals. BC ONLY	**FUN-6.F.1** Some rational functions can be decomposed into sums of ratios of linear, nonrepeating factors to which basic integration techniques can be applied. BC ONLY