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

Date	Lesson	HW Assignment
7-Dec	6.1 Area, 6.11 Midpoint Rule	**HW1**--p.396 #2,3,(make tables of values) 5ab, p.411 AP Practice #1,10a, p.514 #5, Calculator p.515 #26ab,27
8-Dec	6.1 Area, 6.11 Midpoint Rule	**HW2**--p.410 #63,66, p.411 #9a, p.461 AP Practice #10, p.514 #6, Calculator p.515 #28
9-Dec	6.1 Area, 6.11 Midpoint Rule	**HW3**--p.410 #64, AP Practice #5, p.516 AP Practice #5, Calculator p.516 #35c
12-Dec	6.2 The Definite Integral	**HW4**--p.408 #13,14,17,27-30, p.412 AP Practice #10bd
13-Dec	***Late Start Schedule*** 6.2 The Definite Integral	**HW5**--Definite Integrals HW Handout
14-Dec	6.4 Properties of the Definite Integral	**HW6**--p.408 #15,16, p.432 #9, p.437 AP Practice #1,3,11, p.460 AP Practice #14bc
15-Dec	6.5 Indefinite Integral	**HW8**--p.449 #9,10,11,12,13, p.453 AP Practice #1
16-Dec	*Practice for AP Practice Exam / Calculus Holiday Songs*	**STUDY!!!!**
19-Dec	*Practice for AP Practice Exam*	**STUDY!!!!**
20-Dec	**FINAL EXAMS**(1st@8:45am,3rd@10:25am)	**STUDY!!!!**
21-Dec	**FINAL EXAMS**(2nd@8:45am,4th@10:25am)	**STUDY!!!!**
22-Dec	**FINAL EXAMS**(6th@8:45am,5th@10:25am)	**NO Additional Homework**
23-Dec	**NO SCHOOL -** Teacher Institute Day	**NO Additional Homework**
12/24-1/8	**WINTER BREAK**	**NO Additional Homework**
9-Jan	Go Over Final Exam/AP Practice Exam	**HW7**--p.432 #1,2,3,4,11, p.437 AP Practice #5,14
10-Jan	***Late Start Schedule*** 6.5 Indefinite Integral	**HW9**--AP M/C & FRQ Questions Handout
11-Jan	6.3 Fundamental Theorem of Calculus	**HW10**--p.420 #19,22,27,29,35,37 (check all answers with Calculator) **Study for Quiz 6.1, 6.2, & 6.4**
12-Jan	6.3 Fundamental Theorem of Calculus **Quiz 6.1,6.2, & 6.4** *January IML Math Contest after school*	**HW11**--p.420 #23,26,28,31,33,36 (check all answers with Calculator)
13-Jan	6.5 Method of Substitution	**HW12**--p.449 #21-27,49

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Date	Lesson	HW Assignment
16-Jan	**NO SCHOOL - M.L. King, Jr B-day**	**NO Additional Homework**
17-Jan	6.5 Method of Substitution	**HW13**--p.449 #29,30,31,37,40,53, p.453 AP Practice #6,7,13
18-Jan	6.5 Method of Substitution	**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**
19-Jan	6.5 Method of Substitution ***Quiz 6.5 & 6.3***	**HW15**--p.450 #62b,75,130,132ab (check all answers with Calculator), Calculator p.450 #95
20-Jan	6.4 MVT for Integrals & Average Value	**HW16**--p.434 #71,81b, p.437 AP Practice #2, p.451 #101, p.454 AP Practice #9, Calculator p.434 #98
23-Jan	6.3 Fundamental Theorem of Calculus	**HW17**--p.420 #5,7,11,15,17, p.423 AP Practice #6,7
24-Jan	***Late Start Schedule*** 6.3 Fundamental Theorem of Calculus	**HW18**--p.420 #13,18, p.424 AP Practice #9,10,12, Calculator p.421 #63ab, p.424 AP Practice #11
25-Jan	6.11 Trapezoid Sums	**HW19**--p.514 #3, Calculator p.515 #9,25c,26c,30a
26-Jan	6.11 Trapezoid Sums	**HW20**--p.516 #31,32, AP Practice #1-4
27-Jan	*Unit 5 Review (Book Chapter 6)*	**HW21**--p.458 #9,15,19,23,32,41,44, AP Practice #8,9,12, p.536 AP Review #3,5
30-Jan	*Unit 5 Review (Book Chapter 6)*	**STUDY for TEST!!!**
31-Jan	***Late Start Schedule*** Unit 5 AP Lab Activity (Book Chapter 6)	*AP Activity: Unit 5 due 2/7*
1-Feb	**Unit 5 Test (Book Chapter 6)**	**NO Additional Homework**

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

Date **Lesson** **HW Assignment**

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.

School Year 2022/2023 Mr.Gierut/Ms. Kane

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Date	**Lesson**	**HW Assignment**

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.