

Calculus AB Schedule--Unit 2/Chapter 2 Derivatives

<u>Date</u>	<u>Lesson</u>	<u>HW Assignment</u>
7-Sep	2.1 Rates of Change and the Derivative	HW1 --p.170 #45,49a, AP Practice #7, Video on Definition of a Derivative
8-Sep	2.1 Rates of Change and the Derivative	HW2 --p.168 #8a,11a,17b,25, p.169 #39,51 AP Practice #4,8
9-Sep	2.2 The Derivative and Its Properties	HW3 --p.169 AP Practice #6, p.179 #13,15,19,55,57,59,61,63
12-Sep	2.3 Derivative of a Polynomial and e^x	HW4 --p.190 #7,12,14,19,35ab p.193 AP Practice #1,11
13-Sep	1/2 Day Schedule 2.3 Derivative of a Polynomial and e^x	Study for Quiz 2.1 & 2.2
14-Sep	2.3 Derivative of a Polynomial and e^x Quiz 2.1 & 2.2	HW6 --p.190 #37ab,47ce,51,74 Calculator p.190 #63a, p.193 AP Practice #8, Video on Differentiability
15-Sep	2.2 Differentiability	HW7 --p.179 #20,21,39,44, p.182 AP Practice #2,7
16-Sep	2.2 Differentiability	HW8 --p.179 #24,49,72, p.182 AP Practice #3,6,9
19-Sep	2.2 Differentiability	HW9 --(make sure to write Calculus reasons, not just answers only) p.179 #25, 31,32,33,34,60, p.182 AP Practice #1,11
20-Sep	Late Start Schedule 2.4 Differentiating the Product of Two Functions	HW10 --p.202 #9,17,45,73ab,81a, p.206 AP Practice #4
21-Sep	2.4 Differentiating the Quotient of Two Functions	HW11 --p.202 #23,37,69ab,81c, Video on Particle Motion Study for Quiz 2.3 & 2.2
22-Sep	2.4 Differentiating Higher Order Derivatives Quiz 2.3 & 2.2	HW12 --p.203 #57,93abc, p.207 AP Practice #6
23-Sep	2.4 Differentiating Higher Order Derivatives	HW13 --p.193 AP Practice #3, p.205 #94abc, Calculator p.203 #83
26-Sep	2.4 Differentiating Higher Order Derivatives	HW14 --AP Particle Motion Problems
27-Sep	Late Start Schedule 2.4 Differentiating Higher Order Derivatives	HW15 --AP FRQ Problems
28-Sep	2.5 Derivatives of Trigonometric Functions	HW16 --p.212 #5,15,19,31,45,Calculator #55
29-Sep	2.5 Derivatives of Trigonometric Functions	HW17 --p.214 AP Practice #1,2,3,4,6,7,8,9
30-Sep	AP Activity: Unit 2	<i>AP Activity: Unit 2 Due 10/7</i>

Calculus AB Schedule--Unit 2/Chapter 2 Derivatives

<u>Date</u>	<u>Lesson</u>	<u>HW Assignment</u>
3-Oct	<i>Unit 2 REVIEW</i>	HW18 --p.217 #5,10,14,17(include reasons),18(include reasons), 24,33,34,55, 62,67a,71,74,76,77
4-Oct	<i>Late Start Schedule (AP Celebration)</i> <i>Unit 2 REVIEW</i>	STUDY for TEST!!!
5-Oct	Unit 2 TEST	NO Additional Homework

Calculus AB Schedule--Unit 2/Chapter 2 Derivatives

Date

Lesson

HW Assignment

UNIT 2: Differentiation

CHA-2
Derivatives allow us to determine rates of change at an instant by applying limits to knowledge about rates of change over intervals.

LEARNING OBJECTIVE

CHA-2.A
Determine average rates of change using difference quotients.

ESSENTIAL KNOWLEDGE

CHA-2.A.1
The difference quotients $\frac{f(a+h)-f(a)}{h}$ and $\frac{f(x)-f(a)}{x-a}$ express the average rate of change of a function over an interval.

CHA-2.B
Represent the derivative of a function as the limit of a difference quotient.

CHA-2.B.1
The instantaneous rate of change of a function at $x = a$ can be expressed by $\lim_{h \rightarrow 0} \frac{f(a+h)-f(a)}{h}$ or $\lim_{x \rightarrow a} \frac{f(x)-f(a)}{x-a}$, provided the limit exists. These are equivalent forms of the definition of the derivative and are denoted $f'(a)$.

CHA-2.B
Represent the derivative of a function as the limit of a difference quotient.

CHA-2.B.2
The derivative of f is the function whose value at x is $\lim_{h \rightarrow 0} \frac{f(x+h)-f(x)}{h}$, provided this limit exists.

CHA-2.B.3
For $y = f(x)$, notations for the derivative include $\frac{dy}{dx}$, $f'(x)$, and y' .

CHA-2.B.4
The derivative can be represented graphically, numerically, analytically, and verbally.

CHA-2.C
Determine the equation of a line tangent to a curve at a given point.

CHA-2.C.1
The derivative of a function at a point is the slope of the line tangent to a graph of the function at that point.

CHA-2.D
Estimate derivatives.

CHA-2.D.1
The derivative at a point can be estimated from information given in tables or graphs.

CHA-2.D.2
Technology can be used to calculate or estimate the value of a derivative of a function at a point.

CHA-3
Derivatives allow us to solve real-world problems involving rates of change.

LEARNING OBJECTIVE

CHA-3.B
Calculate rates of change in applied contexts.

ESSENTIAL KNOWLEDGE

CHA-3.B.1
The derivative can be used to solve rectilinear motion problems involving position, speed, velocity, and acceleration.

LIM-3
Reasoning with definitions, theorems, and properties can be used to determine a limit.

LEARNING OBJECTIVE

LIM-3.A
Interpret a limit as a definition of a derivative.

ESSENTIAL KNOWLEDGE

LIM-3.A.1
In some cases, recognizing an expression for the definition of the derivative of a function whose derivative is known offers a strategy for determining a limit.

FUN-2
Recognizing that a function's derivative may also be a function allows us to develop knowledge about the related behaviors of both.

LEARNING OBJECTIVE

FUN-2.A
Explain the relationship between differentiability and continuity.

ESSENTIAL KNOWLEDGE

FUN-2.A.1
If a function is differentiable at a point, then it is continuous at that point. In particular, if a point is not in the domain of f , then it is not in the domain of f' .

FUN-2.A.2
A continuous function may fail to be differentiable at a point in its domain.

FUN-3
Recognizing opportunities to apply derivative rules can simplify differentiation.

LEARNING OBJECTIVE

FUN-3.A
Calculate derivatives of familiar functions.

ESSENTIAL KNOWLEDGE

FUN-3.A.1
Direct application of the definition of the derivative and specific rules can be used to calculate the derivative for functions of the form $f(x) = x^n$.

FUN-3.A
Calculate derivatives of familiar functions.

FUN-3.A.2
Sums, differences, and constant multiples of functions can be differentiated using derivative rules.

FUN-3.A
Calculate derivatives of familiar functions.

FUN-3.A.3
The power rule combined with sum, difference, and constant multiple properties can be used to find the derivatives for polynomial functions.

FUN-3.B
Calculate derivatives of products and quotients of differentiable functions.

FUN-3.A.4
Specific rules can be used to find the derivatives for sine, cosine, exponential, and logarithmic functions.

FUN-3.B
Calculate derivatives of products and quotients of differentiable functions.

FUN-3.B.1
Derivatives of products of differentiable functions can be found using the product rule.

FUN-3.B
Calculate derivatives of products and quotients of differentiable functions.

FUN-3.B.2
Derivatives of quotients of differentiable functions can be found using the quotient rule.

FUN-3.F
Determine higher order derivatives of a function.

FUN-3.B.3
Rearranging tangent, cotangent, secant, and cosecant functions using identities allows differentiation using derivative rules.

FUN-3.F.1
Differentiating f' produces the second derivative f'' , provided the derivative of f' exists; repeating this process produces higher-order derivatives of f .

FUN-3.F.2
Higher-order derivatives are represented with a variety of notations. For $y = f(x)$, notations for the second derivative include $\frac{d^2y}{dx^2}$, $f''(x)$, and y'' . Higher-order derivatives can be denoted $\frac{d^n y}{dx^n}$ or $f^{(n)}(x)$.