

Calculus AB Schedule--Unit 2/Chapter 2 Derivatives

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 3				5-Sep	6-Sep
Lesson				EARLY DISMISSAL Unit 1 TEST	2.1 Rates of Change and the Derivative
HMWK				No Additional Homework	HW1 --p.170 #45, 49a, AP Practice #7, Video on Definition of a Derivative
Week 4	9-Sep	10-Sep	11-Sep	12-Sep	13-Sep
Lesson	2.1 Rates of Change and the Derivative	2.2 The Derivative and Its Properties	EARLY DISMISSAL 2.3 Derivative of a Polynomial and e^x	2.3 Derivative of a Polynomial and e^x	2.2 Differentiability
HMWK	HW2 --p.168 #8a, 11a,17b,25, p.169 #39,51 AP Practice #4,8	HW3 --p.169 AP Practice #6, p.179 #13,15,19,55,57, 59,61,63	HW4 --p.190 #7,12,14,19,35ab p.193 AP Practice #1,11	HW5 --p.190 #37ab,47ce,51,74 Calculator p.190 #63a, p.193 AP Practice #8, Video on Differentiability	HW6 --p.179 #20,21,39,44, p.182 AP Practice #2,7
Week 5	16-Sep	17-Sep	18-Sep	19-Sep	20-Sep
Lesson	2.2 Differentiability	1/2 DAY Quiz 2.1, 2.2 & 2.3	2.2 Differentiability	Assembly? 2.4 Differentiating the Product of Two Functions	2.4 Differentiating the Product of Two Functions
HMWK	Study for Quiz 2.1, 2.2 & 2.3	HW7 --p.179 #24, 49,72, p.182 AP Practice #3,6,9	HW8 --(make sure to write Calculus reasons, not just answers only) p.179 #25,31,32, 33,34,60, p.182 AP Practice #1,11	HW9 --p.202 #9,17, 45,73ab,81a, p.206 AP Practice #4	HW10 --p.202 #23,37,69ab,81c, Video on Particle Motion

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	Monday	Tuesday	Wednesday	Thursday	Friday
Week 6	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep
Lesson	2.4 Differentiating Higher Order Derivatives	2.4 Differentiating Higher Order Derivatives	EARLY DISMISSAL 2.4 Differentiating Higher Order Derivatives	2.4 Differentiating Higher Order Derivatives	2.5 Derivatives of Trigonometric Functions
HMWK	HW11 --p.203 #57,93abc, p.207 AP Practice #6	HW12 --p.193 AP Practice #3, p.205 #94abc, Calculator p.203 #83	HW13 --AP Particle Motion Problems	HW14 --AP FRQ Problems	HW15 --p.212 #5,15,19,31,45, Calculator #55
Week 7	30-Sep	1-Oct	2-Oct	3-Oct	3-Oct
Lesson	2.5 Derivatives of Trigonometric Functions	<i>Unit 2 REVIEW</i>	EARLY DISMISSAL Unit 2 REVIEW ACT Practice Test PSAT for Some Juniors	AP Activity: Unit 2	Unit 2 TEST
HMWK	HW16 --p.214 AP Practice #1,2,3, 4,6,7,8,9	HW17 --p.217 #5,10,14,17,18 (include reasons), 24,33,34,55,62, 67a,71,74,76,77	STUDY for TEST!!!	AP Activity: Unit 2 due Oct 10	No Additional Homework

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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 $f(x) = x^r$.

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.3

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

FUN-3.A

Calculate derivatives of familiar 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.B

Calculate derivatives of products and quotients of differentiable functions.

FUN-3.B.3

Rearranging tangent, cotangent, secant, and cosecant functions using identities allows differentiation using derivative rules.

FUN-3.F

Determine higher order derivatives of a function.

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 $f^{(n)}(x)$.