Calculus AB Schedule--Unit 4/Chapter 4 and 5: Applications of Derivatives

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 11				*2-Nov*	*3-Nov*
Lesson				5.1 Maximum and Minimum Values; Critical Numbers	5.1 Maximum and Minimum Values; Critical Numbers
HMWK				**HW1**--p.316 #7, 13,17,23,25,27,35, p.319 AP Practice #1, Calculator p.317 #66ab	**HW2**--p.317 #39, 42,51,61, p.319 AP Practice #3,6

Week 12	*6-Nov*	*7-Nov*	*8-Nov*	*9-Nov*	*10-Nov*
Lesson	5.1 Maximum and Minimum Values; Critical Numbers	***LATE START*** 5.2 Mean Value Theorem	5.2 Mean Value Theorem	5.2 Mean Value Theorem ***Veterans' Day Assembly?***	5.3 Local Extrema and Concavity
HMWK	**HW3**--p.317 #59, 63 p.319 AP Practice #2,5, Calculator p.317 #66,70ab	**HW4**--p.328 #21ab, 27ab,58, p.330 AP Practice #3, Calculator #24,29	**HW5**--p.328 #23, 22,68, p.330 AP Practice #9, Calculator #28	**HW6**--p.328 #31, 37,41, p.344 #13,17,35,37, p.347 AP Practice #4	**HW7**--p.345 #39bc,41bc,49bc, 77,79

Week 13	*13-Nov*	*14-Nov*	*15-Nov*	*16-Nov*	*17-Nov*
Lesson	5.3 Local Extrema and Concavity	***LATE START*** 5.3 Local Extrema and Concavity	5.3 Local Extrema and Concavity	5.3 Local Extrema and Concavity	4.2 Linearization **Quiz 5.1, 5.2 & 5.3**
HMWK	**HW8**--p.345 #63, 64, p.347 AP Practice #2,5,6	**HW9**--p.348 AP Practice #9,10,12, 14, Video on 2nd Derivative Test *November IML Math Contest after school?*	**HW10**--p.345 #67b, 69b,91, p.347 AP Practice #1,7,8	**HW11**--p.345 #66, 81,85, p.347 AP Practice #3,4,11, 13 **Study for Quiz 5.1, 5.2 & 5.3**	**HW12**--p.278 #25, 27, Calculator p.278 #35,37, p.281 AP Practice #5,8

Week 14	*20-Nov*	*21-Nov*	*22-Nov*	*23-Nov*	*24-Nov*
Lesson	4.2 Linearization	4.3 Related Rates	**NO SCHOOL --** Day Before Turkey Day	**NO SCHOOL --** Turkey Day	***NO SCHOOL --*** *Day After Turkey Day*
HMWK	**HW13**--p.278 #7, 33,53, p.281 AP Practice #7, p.304 AP Review #2,6	**HW14**--p.286 #7, 9,10,11,13	**No Additional Homework**	**No Additional Homework**	**No Additional Homework**

Calculus AB Schedule--Unit 4/Chapter 4 and 5: Applications of Derivatives

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 14	*27-Nov*	*28-Nov*	*29-Nov*	*30-Nov*	*1-Dec*
Lesson	4.3 Related Rates	***LATE START*** 4.3 Related Rates	4.3 Related Rates	*Unit 4 REVIEW (Book Chapters 4 & 5)*	AP Activity: Unit 4 (Book Chapters 4 & 5)
HMWK	**HW15**--p.286 #32, 33,34, p.291 AP Practice #9	**HW16--**p.286 #19, 22,35,39	**HW17--**p.288 #52, p.290 AP Practice #2,3,4,5	**HW18--**p.303 #6, 13, AP Review #4,7a, p.384 #7,9b,21, AP Review #2,4,5,8, 11 Calculator #19	*AP Activity: Unit 4 due Dec 8*

Week 15	*4-Dec*	*5-Dec*
Lesson	*Unit 4 REVIEW (Book Chapters 4 & 5)*	***LATE START*** **Unit 4 TEST**
HMWK	**STUDY for TEST!!!**	**No Additional Homework**

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	Monday	Tuesday	Wednesday	Thursday	Friday

UNIT 4: Applications of Derivatives

FUN-4

A function's derivative can be used to understand some behaviors of the function.

LEARNING OBJECTIVE	ESSENTIAL KNOWLEDGE
FUN-4.A Justify conclusions about the behavior of a function based on the behavior of its derivatives.	**FUN-4.A.1** The first derivative of a function can provide information about the function and its graph, including intervals where the function is increasing or decreasing.
FUN-4.A Justify conclusions about the behavior of a function based on the behavior of its derivatives.	**FUN-4.A.2** The first derivative of a function can determine the location of relative (local) extrema of the function.
FUN-4.A Justify conclusions about the behavior of a function based on the behavior of its derivatives.	**FUN-4.A.3** Absolute (global) extrema of a function on a closed interval can only occur at critical points or at endpoints.
FUN-4.A Justify conclusions about the behavior of a function based on the behavior of its derivatives.	**FUN-4.A.4** The graph of a function is concave up (down) on an open interval if the function's derivative is increasing (decreasing) on that interval. **FUN-4.A.5** The second derivative of a function provides information about the function and its graph, including intervals of upward or downward concavity. **FUN-4.A.6** The second derivative of a function may be used to locate points of inflection for the graph of the original function.
FUN-4.A Justify conclusions about the behavior of a function based on the behavior of its derivatives.	**FUN-4.A.7** The second derivative of a function may determine whether a critical point is the location of a relative (local) maximum or minimum. **FUN-4.A.8** When a continuous function has only one critical point on an interval on its domain and the critical point corresponds to a relative (local) extremum of the function on the interval, then that critical point also corresponds to the absolute (global) extremum of the function on the interval.
FUN-4.A Justify conclusions about the behavior of a function based on the behavior of its derivatives.	**FUN-4.A.9** Key features of functions and their derivatives can be identified and related to their graphical, numerical, and analytical representations. **FUN-4.A.10** Graphical, numerical, and analytical information from f' and f'' can be used to predict and explain the behavior of f.
FUN-4.A Justify conclusions about the behavior of a function based on the behavior of its derivatives.	**FUN-4.A.11** Key features of the graphs of f, f', and f'' are related to one another.
FUN-4.D Determine critical points of implicit relations.	**FUN-4.D.1** A point on an implicit relation where the first derivative equals zero or does not exist is a critical point of the function.
FUN-4.E Justify conclusions about the behavior of an implicitly defined function based on evidence from its derivatives.	**FUN-4.E.1** Applications of derivatives can be extended to implicitly defined functions. **FUN-4.E.2** Second derivatives involving implicit differentiation may be relations of x, y, and $\frac{dy}{dx}$.

FUN-1

Existence theorems allow us to draw conclusions about a function's behavior on an interval without precisely locating that behavior.

LEARNING OBJECTIVE	ESSENTIAL KNOWLEDGE
FUN-1.B Justify conclusions about functions by applying the Mean Value Theorem over an interval.	**FUN-1.B.1** If a function f is continuous over the interval $[a, b]$ and differentiable over the interval (a, b), then the Mean Value Theorem guarantees a point within that open interval where the instantaneous rate of change equals the average rate of change over the interval.
FUN-1.C Justify conclusions about functions by applying the Extreme Value Theorem.	**FUN-1.C.1** If a function f is continuous over the interval $[a, b]$, then the Extreme Value Theorem guarantees that f has at least one minimum value and at least one maximum value on $[a, b]$. **FUN-1.C.2** A point on a function where the first derivative equals zero or fails to exist is a critical point of the function. **FUN-1.C.3** All local (relative) extrema occur at critical points of a function, though not all critical points are local extrema.

CHA-3

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

LEARNING OBJECTIVE	ESSENTIAL KNOWLEDGE
CHA-3.A Interpret the meaning of a derivative in context.	**CHA-3.A.1** The derivative of a function can be interpreted as the instantaneous rate of change with respect to its independent variable. **CHA-3.A.2** The derivative can be used to express information about rates of change in applied contexts. **CHA-3.A.3** The unit for $f'(x)$ is the unit for f divided by the unit for x.
CHA-3.D Calculate related rates in applied contexts.	**CHA-3.D.1** The chain rule is the basis for differentiating variables in a related rates problem with respect to the same independent variable. **CHA-3.D.2** Other differentiation rules, such as the product rule and the quotient rule, may also be necessary to differentiate all variables with respect to the same independent variable.
CHA-3.E Interpret related rates in applied contexts.	**CHA-3.E.1** The derivative can be used to solve related rates problems; that is, finding a rate at which one quantity is changing by relating it to other quantities whose rates of change are known.
CHA-3.F Approximate a value on a curve using the equation of a tangent line.	**CHA-3.F.1** The tangent line is the graph of a locally linear approximation of the function near the point of tangency. **CHA-3.F.2** For a tangent line approximation, the function's behavior near the point of tangency may determine whether a tangent line value is an underestimate or an overestimate of the corresponding function value.