Calculus BC Schedule--Unit 3/Chapter 3 Derivatives

Date	Lesson	HW Assignment
16-Sep	***1/2 Day Schedule***	**HW1**--Video on Chain Rule
17-Sep	3.6 Chain Rule	**HW2**--p.153 #15,16,21,p.535 #14,p.545 #35ac, 46ab
18-Sep	3.6 Chain Rule	**HW3**--AP Classroom Chain Rule HW #1abc,2,3,4ab
21-Sep	3.6 Chain Rule	**HW4**--Video on Implicit Differentiation, p.162 #1,3,5
22-Sep	3.7 Implicit Differentiation	**HW5**--p.162 #9,11,17,19,27
23-Sep	***SAT for Some Seniors*** ***No Classes*** Study for Test Retake	**HW6**--p.162 #24,25,47b,55a,61,62
24-Sep	3.7 Implicit Differentiation	**HW7**--Video on Derivatives of Inverse Trig, p.170 #1,3,12
25-Sep	3.8 Derivative of Inverse Trig Functions	**HW8**--Video on Derivative of Inverse Functions, AP Classroom problems
28-Sep	3.8 Derivative of Inverse Trig Functions	**HW9**--Video on Derivatives of Exponential Functions, p.178 #1,4,11,13, p.545 #29
29-Sep	3.9 Derivatives of Exp & Log Functions	**HW10**--Video on Derivatives of Logarithmic Functions, p.178 #15,21, p.535 #15a,16a
30-Sep	3.9 Derivatives of Exp & Log Functions **Quick M/C Quiz**	**HW11**--p.178 #16,20,23,27,31,61, p.184 #83b
1-Oct	*Chapter 3 REVIEW*	**HW12**--p.181 #11,15,17,35,41, 67bcf, p.560 #13,21,47b
2-Oct	*Chapter 3 REVIEW*	**Study for Test**
5-Oct	AP Activity: Chapter 3	AP Activity: Chapter 3 Due 10/13
6-Oct	**Chapter 3 TEST**	**HW1**--Video on EVT & the Candidates Test

Calculus BC Schedule--Unit 3/Chapter 3 Derivatives

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

UNIT 3: Differentiation Continued

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

LEARNING OBJECTIVE	ESSENTIAL KNOWLEDGE
FUN-3.C Calculate derivatives of compositions of differentiable functions.	**FUN-3.C.1** The chain rule provides a way to differentiate composite functions.
FUN-3.D Calculate derivatives of implicitly defined functions.	**FUN-3.D.1** The chain rule is the basis for implicit differentiation.
FUN-3.E Calculate derivatives of inverse and inverse trigonometric functions.	**FUN-3.E.1** The chain rule and definition of an inverse function can be used to find the derivative of an inverse function, provided the derivative exists.
FUN-3.E Calculate derivatives of inverse and inverse trigonometric functions.	**FUN-3.E.2** The chain rule applied with the definition of an inverse function, or the formula for the derivative of an inverse function, can be used to find the derivatives of inverse trigonometric functions.

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

LEARNING OBJECTIVE	ESSENTIAL KNOWLEDGE
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.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 $f^{(n)}(x)$.

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

LEARNING OBJECTIVE	ESSENTIAL KNOWLEDGE
FUN-3.G Calculate derivatives of functions written in polar coordinates. **BC ONLY**	**FUN-3.G.1** Methods for calculating derivatives of real-valued functions can be extended to functions in polar coordinates. **BC ONLY**
	FUN-3.G.2 For a curve given by a polar equation $r = f(\theta)$, derivatives of r, x, and y with respect to θ, and first and second derivatives of y with respect to x can provide information about the curve. **BC ONLY**

FUN-8
Solving an initial value problem allows us to determine an expression for the position of a particle moving in the plane.

LEARNING OBJECTIVE	ESSENTIAL KNOWLEDGE
FUN-8.B Determine values for positions and rates of change in problems involving planar motion. **BC ONLY**	**FUN-8.B.1** Derivatives can be used to determine velocity, speed, and acceleration for a particle moving along a curve in the plane defined using parametric or vector-valued functions. **BC ONLY**
	FUN-8.B.2 For a particle in planar motion over an interval of time, the definite integral of the velocity vector represents the particle's displacement (net change in position) over the interval of time, from which we might determine its position. The definite integral of speed represents the particle's total distance traveled over the interval of time. **BC ONLY**

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

LEARNING OBJECTIVE	ESSENTIAL KNOWLEDGE
CHA-3.G Calculate derivatives of parametric functions. **BC ONLY**	**CHA-3.G.1** Methods for calculating derivatives of real-valued functions can be extended to parametric functions. **BC ONLY**
	CHA-3.G.2 For a curve defined parametrically, the value of $\frac{dy}{dx}$ at a point on the curve is the slope of the line tangent to the curve at that point. $\frac{dy}{dx}$, the slope of the line tangent to a curve defined using parametric equations, can be determined by dividing $\frac{dy}{dt}$ by $\frac{dx}{dt}$, provided $\frac{dx}{dt}$ does not equal zero. **BC ONLY**
CHA-3.G Calculate derivatives of parametric functions. **BC ONLY**	**CHA-3.G.3** $\frac{d^2y}{dx^2}$ can be calculated by dividing $\frac{d}{dt}\left(\frac{dy}{dx}\right)$ by $\frac{dx}{dt}$. **BC ONLY**
CHA-3.H Calculate derivatives of vector-valued functions. **BC ONLY**	**CHA-3.H.1** Methods for calculating derivatives of real-valued functions can be extended to vector-valued functions. **BC ONLY**