Calculus AB Schedule -- Unit 6 Differential Equations and Mathematical Modeling

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 20					*2-Feb*
Lesson					7.1 Ordinary Differential Equations
HMWK					**HW1**--p.543 #31,35,38,39, AP Practice #4, p.542 #21

Week 21	*5-Feb*	*6-Feb*	*7-Feb*	*8-Feb*	*9-Feb*
Lesson	7.2 Separable Differential Equations	***LATE START*** 7.2 Separable Differential Equations	7.2 Separable Differential Equations	4.4 Indeterminate Forms & L'Hôpital's Rule	4.4 Indeterminate Forms & L'Hôpital's Rule ***Black History Month Assembly?***
HMWK	**HW2**--p.551 #15, 18,19,21, AP Practice #1,2,3	**HW3**--p.551 #22, 23, AP Practice #5,9, p.569 #16b	**HW4**--p.551 #16, 17,20, AP Practice #4,6	**HW5**--p.299 #7, 9,27,29,34,37, AP Practice #1,8	**HW6**--p.299 #35, 39,40,41, AP Practice #2,7

Week 22	*12-Feb*	*13-Feb*	*14-Feb*	*15-Feb*	*16-Feb*
Lesson	7.3 Slope Fields	7.3 Slope Fields **Quiz 7.2 & 4.4**	7.3 Slope Fields	7.3 Slope Fields	*Unit 6 Review (Book Chapters 4 & 7)*
HMWK	**HW7**--Calculator p.557 Graph slope field in calculator & sketch the particular solution on paper, #11-16 **Study for Quiz 7.2 & 4.4**	**HW8**--Sketch slope fields from handout #29-34	**HW9**--p.557 #17, 18, AP Practice #1,3, p.570 AP Practice #5	**HW10**--AP FRQs	**HW11**--p.304 23, 27,31, AP Practice 3, p.569 #11b,14b, AP Practice #5

Week 23	*19-Feb*	*20-Feb*	*21-Feb*
Lesson	**NO SCHOOL** -- President's Day	***LATE START*** AP Activity: Unit 6 (Book Chapters 4 & 7)	**Unit 6 TEST**
HMWK	**No Additional Homework**	AP Activity: Unit 6 due Feb 27	**No Additional Homework**

Calculus AB Schedule -- Unit 6 Differential Equations and Mathematical Modeling

Unit 6: Differential Equations & Mathematical Modeling

FUN-7
Solving differential equations allows us to determine functions and develop models.

LEARNING OBJECTIVE	ESSENTIAL KNOWLEDGE
FUN-7.A Interpret verbal statements of problems as differential equations involving a derivative expression.	**FUN-7.A.1** Differential equations relate a function of an independent variable and the function's derivatives.
FUN-7.B Verify solutions to differential equations.	**FUN-7.B.1** Derivatives can be used to verify that a function is a solution to a given differential equation. **FUN-7.B.2** There may be infinitely many general solutions to a differential equation.
FUN-7.C Estimate solutions to differential equations.	**FUN-7.C.1** A slope field is a graphical representation of a differential equation on a finite set of points in the plane. **FUN-7.C.2** Slope fields provide information about the behavior of solutions to first-order differential equations.
FUN-7.C Estimate solutions to differential equations.	**FUN-7.C.3** Solutions to differential equations are functions or families of functions.
FUN-7.D Determine general solutions to differential equations.	**FUN-7.D.1** Some differential equations can be solved by separation of variables. **FUN-7.D.2** Antidifferentiation can be used to find general solutions to differential equations.
FUN-7.E Determine particular solutions to differential equations.	**FUN-7.E.1** A general solution may describe infinitely many solutions to a differential equation. There is only one particular solution passing through a given point. **FUN-7.E.2** The function F defined by $F(x) = y_0 + \int_a^x f(t)\,dt$ is a particular solution to the differential equation $\frac{dy}{dx} = f(x)$, satisfying $F(a) = y_0$. **FUN-7.E.3** Solutions to differential equations may be subject to domain restrictions.
FUN-7.F Interpret the meaning of a differential equation and its variables in context.	**FUN-7.F.1** Specific applications of finding general and particular solutions to differential equations include motion along a line and exponential growth and decay. **FUN-7.F.2** The model for exponential growth and decay that arises from the statement "The rate of change of a quantity is proportional to the size of the quantity" is $\frac{dy}{dt} = ky$.
FUN-7.G Determine general and particular solutions for problems involving differential equations in context.	**FUN-7.G.1** The exponential growth and decay model, $\frac{dy}{dt} = ky$, with initial condition $y = y_0$ when $t = 0$, has solutions of the form $y = y_0 e^{kt}$.