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

Date	Lesson	HW Assignment
2-Feb	7.1 Ordinary Differential Equations	**HW1**--p.543 #31,35,38,39, AP Practice #4, p.542 #21
3-Feb	7.2 Separable Differential Equations	**HW2**--p.551 #15,18,19,21, AP Practice #1,2,3
6-Feb	7.2 Separable Differential Equations	**HW3**--p.551 #22,23, AP Practice #5,9, p.569 #16b
7-Feb	***Late Start Schedule*** 7.2 Separable Differential Equations *February IML Math Contest after school*	**HW4**--p.551 #16,17,20, AP Practice #4,6
8-Feb	7.3 Slope Fields	**HW7**--Calculator p.557 Graph slope field in calculator & sketch the particular solution on paper, #11-16
9-Feb	4.4 Indeterminate Forms & L'Hôpital's Rule	**HW5**--p.299 #7,9,27,29,34,37, AP Practice #1,8
10-Feb	4.4 Indeterminate Forms & L'Hôpital's Rule ***Black History Month Assembly?*** *Ms. Kane on Field Trip*	**HW6**--p.299 #35,39,40,41, AP Practice #2,7
13-Feb	7.3 Slope Fields	**HW8**--Sketch slope fields from handout #29-34 **Study for Quiz 7.2 & 4.4**
14-Feb	***Late Start Schedule*** 7.3 Slope Fields ***Quiz 7.2 & 4.4***	**HW9**--p.557 #17,18, AP Practice #1,3, p.570 AP Practice #5
15-Feb	7.3 Slope Fields	**HW10**--AP FRQs
16-Feb	*Unit 6 Review (Book Chapters 4 & 7)*	**HW11**--p.304 23,27,31, AP Practice 3, p.569 #11b,14b, AP Practice #5
17-Feb	**Unit 6 Test (Book Chapters 4 & 7)**	**NO Additional Homework**
20-Feb	**NO SCHOOL**--President's Day	**NO Additional Homework**
21-Feb	Unit 6 AP Lab Activity(Book Chapters 4 & 7)	*AP Activity: Unit 6 due 2/28*

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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 $y = y_0 e^{kt}$.