Calculus BC Schedule-- Unit 9 (Chapter 10) Infinite Series

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 22		*10-Feb*	*11-Feb*	*12-Feb*	*13-Feb*
Lesson		10.2 Infinite Series	**EARLY DISMISSAL** 10.8 Power Series	10.8 Power Series	10.6 Ratio Test, 10.4 Direct Comparison Test
HMWK		**HW1**--p.807 #19, 25,29,37,39,45,49, 51,53,55, AP Practice #4 *February IML Math Contest after school*	**HW2**--p.867 #45, 46,53a,54a,55a, 56a	**HW3**--p.867 #57a, 58a,59,79a,80a, AP Practice #6,7b	**HW4**--p.850 #5,7,9,23, p.830 #5,7,9 **Study for Quiz 10.2 & 10.8**

Week 23	*16-Feb*	*17-Feb*	*18-Feb*	*19-Feb*	*20-Feb*
Lesson	**NO SCHOOL --** President's Day	10.6 Ratio Test, 10.4 Direct Comparison Test **Quiz 10.2 & 10.8**	**EARLY DISMISSAL** 10.3 Properties of Series, nth term Test, Integral Test, p-series Test, 10.4 Limit Comparison Test	10.3 Properties of Series, nth term Test, Integral Test, p-series Test, 10.4 Limit Comparison Test	10.5 Alternating Series, Absolute Convergence
HMWK	**No Additional Homework**	**HW5**--p.850 #17,25,49, AP Practice #2, p.830 #1,57ab, AP Practice #3	**HW6**--p.820 #2,9, 10,11,15,17,21,23, 33, p.830 #15,17,23	**HW7**--p.820 #39,41, AP Practice #1,2,3, p.830 #37,39, AP Practice #1	**HW8**--p.841 #1,2, 7,9,19,41,43,49

Week 24	*23-Feb*	*24-Feb*	*25-Feb*	*26-Feb*	*27-Feb*
Lesson	10.5 Alternating Series, Absolute Convergence	10.9 Taylor Series; Maclaurin Series	**EARLY DISMISSAL** 10.9 Taylor Series; Maclaurin Series **Quiz 10.3,10.4, 10.5, & 10.6**	10.9 Taylor Series; Maclaurin Series **Black History Month Assembly?**	**NO SCHOOL --** Teacher Institute Day
HMWK	**HW9**--p.841 #45, AP Practice #4, p.855 #8,28,35	**HW10**--p.881 #7,9,29,30,31,34 **Study for Quiz 10.3,10.4, 10.5, & 10.6**	**HW11**--p.881 #10, 11,13,15,17,19, p.869 #67	**HW12**--p.881 #21,23,25,27,39, AP Practice #1,2,3	**No Additional Homework**

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	Monday	Tuesday	Wednesday	Thursday	Friday
Week 25	*2-Mar*	*3-Mar*	*4-Mar*	*5-Mar*	*6-Mar*
Lesson	**NO SCHOOL --** Casimir Pulaski Day	10.10 Taylor Polynomial Approximation & LaGrange Error Bound	10.10 Taylor Polynomial Approximation & LaGrange Error Bound	10.10 Taylor Polynomial Approximation & LaGrange Error Bound	10.2 - 10.10 Series
HMWK	**No Additional Homework**	**HW13--**p.890 #1,5,9,20,21, AP Practice #2,3,4	**HW14--**Calculator p.890 #13ad, 14ad,15ad,16ad, AP Practice #5	**HW15--**AP Practice Problems	**HW16--**AP Series Problems
Week 26	*9-Mar*	*10-Mar*	*11-Mar*	*12-Mar*	
Lesson	10.2 - 10.10 Series	*Unit 9 Review (Book Chapter 10)*	***EARLY DISMISSAL*** *Unit 9 Review (Book Chapter 10)*	**Unit 9 TEST**	
HMWK	**HW17--**AP Series Problems	**HW18--**Unit 10 Progress Checks *March IML Math Contest after school*	**STUDY for TEST!!!**	*See AP Review Schedule*	

Calculus BC Schedule-- Unit 9 (Chapter 10) Infinite Series

	Monday	Tuesday	Wednesday	Thursday	Friday

Unit 9: Infinite Series

LIM-7

Applying limits may allow us to determine the finite sum of infinitely many terms.

LEARNING OBJECTIVE	ESSENTIAL KNOWLEDGE
LIM-7.A Determine whether a series converges or diverges. BC ONLY	**LIM-7.A.1** The nth partial sum is defined as the sum of the first n terms of a series. BC ONLY **LIM-7.A.2** An infinite series of numbers converges to a real number S (or has sum S), if and only if the limit of its sequence of partial sums exists and equals S. BC ONLY
LIM-7.A Determine whether a series converges or diverges. BC ONLY	**LIM-7.A.3** A geometric series is a series with a constant ratio between successive terms. BC ONLY **LIM-7.A.4** If a is a real number and r is a real number such that $\|r\| < 1$, then the geometric series $\sum_{n=0}^{\infty} ar^n = \frac{a}{1-r}$. BC ONLY
LIM-7.A Determine whether a series converges or diverges. BC ONLY	**LIM-7.A.5** The nth term test is a test for divergence of a series. BC ONLY
LIM-7.A Determine whether a series converges or diverges. BC ONLY	**LIM-7.A.6** The integral test is a method to determine whether a series converges or diverges. BC ONLY
LIM-7.A Determine whether a series converges or diverges. BC ONLY	**LIM-7.A.7** In addition to geometric series, common series of numbers include the harmonic series, the alternating harmonic series, and p-series. BC ONLY
LIM-7.A Determine whether a series converges or diverges. BC ONLY	**LIM-7.A.8** The comparison test is a method to determine whether a series converges or diverges. BC ONLY **LIM-7.A.9** The limit comparison test is a method to determine whether a series converges or diverges. BC ONLY
LIM-7.A Determine whether a series converges or diverges. BC ONLY	**LIM-7.A.10** The alternating series test is a method to determine whether an alternating series converges. BC ONLY
LIM-7.A Determine whether a series converges or diverges. BC ONLY	**LIM-7.A.11** The ratio test is a method to determine whether a series of numbers converges or diverges. BC ONLY **EXCLUSION STATEMENT** *The nth term test for divergence, and the integral test, comparison test, limit comparison test, alternating series test, and ratio test for convergence are assessed on the AP Calculus BC Exam. Other methods are not assessed on the exam. However, teachers may include additional methods in the course, if time permits.*
LIM-7.A Determine whether a series converges or diverges. BC ONLY	**LIM-7.A.12** A series may be absolutely convergent, conditionally convergent, or divergent. BC ONLY **LIM-7.A.13** If a series converges absolutely, then it converges. BC ONLY **LIM-7.A.14** If a series converges absolutely, then any series obtained from it by regrouping or rearranging the terms has the same value. BC ONLY
LIM-7.B Approximate the sum of a series. BC ONLY	**LIM-7.B.1** If an alternating series converges by the alternating series test, then the alternating series error bound can be used to bound how far a partial sum is from the value of the infinite series. BC ONLY

LIM-8

Power series allow us to represent associated functions on an appropriate interval.

LEARNING OBJECTIVE	ESSENTIAL KNOWLEDGE
LIM-8.A Represent a function at a point as a Taylor polynomial. BC ONLY	**LIM-8.A.1** The coefficient of the nth degree term in a Taylor polynomial for a function f centered at $x = a$ is $\frac{f^{(n)}(a)}{n!}$. BC ONLY **LIM-8.A.2** In many cases, as the degree of a Taylor polynomial increases, the nth degree polynomial will approach the original function over some interval. BC ONLY
LIM-8.B Approximate function values using a Taylor polynomial. BC ONLY	**LIM-8.B.1** Taylor polynomials for a function f centered at $x = a$ can be used to approximate function values of f near $x = a$. BC ONLY
LIM-8.C Determine the error bound associated with a Taylor polynomial approximation. BC ONLY	**LIM-8.C.1** The Lagrange error bound can be used to determine a maximum interval for the error of a Taylor polynomial approximation to a function. BC ONLY **LIM-8.C.2** In some situations, the alternating series error bound can be used to bound the error of a Taylor polynomial approximation to the value of a function. BC ONLY
LIM-8.D Determine the radius of convergence and interval of convergence for a power series. BC ONLY	**LIM-8.D.1** A power series is a series of the form $\sum_{n=0}^{\infty} a_n(x-r)^n$, where n is a non-negative integer, $\{a_n\}$ is a sequence of real numbers, and r is a real number. BC ONLY **LIM-8.D.2** If a power series converges, it either converges at a single point or has an interval of convergence. BC ONLY **LIM-8.D.3** The ratio test can be used to determine the radius of convergence of a power series. BC ONLY **LIM-8.D.4** The radius of convergence of a power series can be used to identify an open interval on which the series converges, but it is necessary to test both endpoints of the interval to determine the interval of convergence. BC ONLY **LIM-8.D.5** If a power series has a positive radius of convergence, then the power series is the Taylor series of the function to which it converges over the open interval. BC ONLY **LIM-8.D.6** The radius of convergence of a power series obtained by term-by-term differentiation or term-by-term integration is the same as the radius of convergence of the original power series. BC ONLY
LIM-8.E Represent a function as a Taylor series or a Maclaurin series. BC ONLY	**LIM-8.E.1** A Taylor polynomial for $f(x)$ is a partial sum of the Taylor series for $f(x)$. BC ONLY
LIM-8.F Interpret Taylor series and Maclaurin series. BC ONLY	**LIM-8.F.1** The Maclaurin series for $\frac{1}{1-x}$ is a geometric series. BC ONLY **LIM-8.F.2** The Maclaurin series for $\sin x$, $\cos x$, and e^x provides the foundation for constructing the Maclaurin series for other functions. BC ONLY
LIM-8.G Represent a given function as a power series. BC ONLY	**LIM-8.G.1** Using a known series, a power series for a given function can be derived using operations such as term-by-term differentiation or term-by-term integration, and by various methods (e.g., algebraic processes, substitutions, or using properties of geometric series). BC ONLY