

Calculus BC Boot Camp Schedule--Unit 1 Limits and Continuity

	Monday	Tuesday	Wednesday	Thursday	Friday
			<i>29-May</i>	<i>30-May</i>	<i>31-May</i>
Lesson			PreCalculus Topics 9.3 & A.5 Polar Equations	PreCalculus Topics 9.1 Parametric Equations 9.5 & A.6 Vectors	Quiz on Vectors, Parametrics, and Polar 1.1 Limits Numerically & Graphically 1.2 & 1.4 Limits Analytically 1.5 Infinite Limits; Limits at Infinity
HMWK			HW1 – Non-Calculator: p.A46 #5,6,7,10, 11,15,18,25,27, 29,30,31,35, p.699 #17,21, p.701 AP Review Problems #9 Calculator: p.A46 #36,42, 43,44,45, p.667-668 #15,17 AP Practice Problems #3, 4 p.701 AP Review Problems #7,8	HW2 – Non-Calculator: p.681-683 #7b,9b,10b, 11b,12b,13b AP Practice Problems #2, p.A58-A59 #1,7, 41,44, p.667-668 #16 https://courses.lumenlearning.com/precalculus/chapter/problem-set-32-partial-fractions/ #6,8,11,13	HW3 – Non-Calculator: p.85-89 #22,23,26, 27,39, p.99-101 #19,33,35, 39,42,51,53,54,60bf, 69,73,75,79,83,89 p.140-143 #17,18,19, 20,21,24,27,29,37, 43,51,53,63, Calculator: p.85-89 #8,12,31,35, AP Practice #6,8, p.140-143 #78ab,79a
	<i>3-Jun</i>	<i>4-Jun</i>			
Lesson	1.3 & 1.4 Continuity 2.1 Rates of Change, Slope of Tangent Line	2.1 Rates of Change, Slope of Tangent Line Chapter 1 TEST			
HMWK	HW4 – Non-Calculator: p.112-116 #13,17, 21,23,25,62,63,85, 88,101, p.125-127 #13,23, 25,31, AP Practice Problem #1,2, p.168-170 #8ab,11ab, 23,25,27,33,40,45,48, Calculator: p.113 #65 p.168-170 #37abcd, 38cf,51	Turn in Summer Homework Today!			

Calculus BC Boot Camp Schedule--Unit 1 Limits and Continuity

Limits

LIM-1
Reasoning with definitions, theorems, and properties can be used to justify claims about limits.

LEARNING OBJECTIVE

LIM-1.A
Represent limits analytically using correct notation.

ESSENTIAL KNOWLEDGE

LIM-1.A.1
Given a function f , the limit of $f(x)$ as x approaches c is a real number R if $f(x)$ can be made arbitrarily close to R by taking x sufficiently close to c (but not equal to c). If the limit exists and is a real number, then the common notation is $\lim_{x \rightarrow c} f(x) = R$.

EXCLUSION STATEMENT
The epsilon-delta definition of a limit is not assessed on the AP Calculus AB or BC Exam. However, teachers may include this topic in the course if time permits.

LIM-1.B
Interpret limits expressed in analytic notation.

LIM-1.C
Estimate limits of functions.

LIM-1.C.1
The concept of a limit includes one sided limits.

LIM-1.C.2
Graphical information about a function can be used to estimate limits.

LIM-1.C.3
Because of issues of scale, graphical representations of functions may miss important function behavior.

LIM-1.C.4
A limit might not exist for some functions at particular values of x . Some ways that the limit might not exist are if the function is unbounded, if the function is oscillating near this value, or if the limit from the left does not equal the limit from the right.

LIM-1.C.5
Numerical information can be used to estimate limits.

LIM-1.D
Determine the limits of functions using limit theorems.

LIM-1.D.1
One-sided limits can be determined analytically or graphically.

LIM-1.D.2
Limits of sums, differences, products, quotients, and composite functions can be found using limit theorems.

LIM-1.E
Determine the limits of functions using equivalent expressions for the function or the squeeze theorem.

LIM-1.E.1
It may be necessary or helpful to rearrange expressions into equivalent forms before evaluating limits.

Rates of Change & Tangent Lines

CHA-2
Derivatives allow us to determine rates of change at an instant by applying limits to knowledge about rates of change over intervals.

LEARNING OBJECTIVE

CHA-2.A
Determine average rates of change using difference quotients.

ESSENTIAL KNOWLEDGE

CHA-2.A.1
The difference quotients $\frac{f(a+h) - f(a)}{h}$ and $\frac{f(x) - f(a)}{x - a}$ express the average rate of change of a function over an interval.

CHA-2.C
Determine the equation of a line tangent to a curve at a given point.

CHA-2.C.1
The derivative of a function at a point is the slope of the line tangent to a graph of the function at that point.

Continuity

LIM-2
Reasoning with definitions, theorems, and properties can be used to justify claims about continuity.

LEARNING OBJECTIVE

LIM-2.A
Justify conclusions about continuity at a point using the definition.

LIM-2.A.1
Types of discontinuities include removable discontinuities, jump discontinuities, and discontinuities due to vertical asymptotes.

LIM-2.A.2
A function f is continuous at $x = c$ provided that $f(c)$ exists, $\lim_{x \rightarrow c} f(x)$ exists, and $\lim_{x \rightarrow c} f(x) = f(c)$.

LIM-2.B
Determine intervals over which a function is continuous.

LIM-2.B.1
A function is continuous on an interval if the function is continuous at each point in the interval.

LIM-2.B.2
Polynomial, rational, power, exponential, logarithmic, and trigonometric functions are continuous on all points in their domains.

LIM-2.C
Determine values of x or solve for parameters that make discontinuous functions continuous, if possible.

LIM-2.C.1
If the limit of a function exists at a discontinuity in its graph, then it is possible to remove the discontinuity by defining or redefining the value of the function at that point, so it equals the value of the limit of the function as x approaches that point.

LIM-2.C.2
In order for a piecewise-defined function to be continuous at a boundary to the partition of its domain, the value of the expression defining the function on one side of the boundary must equal the value of the expression defining the other side of the boundary, as well as the value of the function at the boundary.

LIM-2
Reasoning with definitions, theorems, and properties can be used to justify claims about continuity.

LEARNING OBJECTIVE

LIM-2.D
Interpret the behavior of functions using limits involving infinity.

LIM-2.D.1
The concept of a limit can be extended to include infinite limits.

LIM-2.D.2
Asymptotic and unbounded behavior of functions can be described and explained using limits.

LIM-2.D.3
The concept of a limit can be extended to include limits at infinity.

LIM-2.D.4
Limits at infinity describe end behavior.

LIM-2.D.5
Relative magnitudes of functions and their rates of change can be compared using limits.