

To be successful in AP Calculus AB, you will frequently need to use previous Algebra 2 and Precalculus skills. The following list contains Algebra 2 and Precalculus standards you need for success in AP Calculus:

- MGSE9-12.F.BF.1c Compose functions. For example, if $T(y)$ is the temperature in the atmosphere as a function of height, and $h(t)$ is the height of a weather balloon as a function of time, then $T(h(t))$ is the temperature at the location of the weather balloon as a function of time.
- MGSE9-12.F.BF.4 Find inverse functions.
- MGSE9-12.F.BF.5 Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.
- MGSE9-12.F.IF.7e Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.
- MGSE9-12.F.TF.2 Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers interpreted as radian measures of angles traversed counterclockwise around the unit circle.
- MGSE9-12.F.IF.7 Graph functions expressed algebraically and show key features of the graph both by hand and by using technology.

This is a required assignment and will count as one minor grade in your minor assignments category for the first semester. Choosing not to complete the summer work on time or at all will negatively affect your performance in the class. Read the instructions carefully to know exactly what you need to do.

AP Calculus AB Summer Work—to be completed no later than Thursday, August 6, 2026

STEP 1: Register for summer work course via hyperlink <https://www.deltamath.com/students?code=ZX99-ET5U> OR

- Go to <https://www.deltamath.com/students>
- Click the yellow “Register” button & enter this code: ZX99-ET5U to join the 2026 AP Calculus AB Summer Work Class, then register with your personal email.

STEP 2:

- Complete the 2026 Calculus AB SUMMER MASTERY **ASSESSMENT**.
- You may use your calculator and/or scratch paper but not notes or computer websites.
- Students are expected to adhere to the Honor Code:

On my honor, I pledge that I have not given nor received any unauthorized aid on this assignment.

STEP 3:

- View your results by clicking the white “Show Solutions” button, in the top right corner of the first box labeled “2026 CALCULUS AB SUMMER MASTERY **ASSESSMENT**”.

STEP 4:

- If you are happy with the grade you earned, you are done with your summer work. The score earned will count towards your minor assignments category in the first semester.
- If you would like to improve the grade you earned, you may do the 2026 Calculus AB Summer Mastery **Corrections** in DeltaMath by clicking the green “Initialize Test Correction” button and the score you earn on the corrections will replace your original score.
- The due date is Thursday, August 6, 2026.

STEP 5:

- Review the “DERIVATIVES AND INTEGRAL FORMULAS” provided and begin memorizing those formulas.
 - Creating and studying flashcards would be a helpful strategy for retaining the information.
- A quiz will be given the end of the first full week of school over the first 16 derivative formulas.

When school starts for 2026-27, the expectation is that you have mastered the summer work concepts and can readily apply those concepts.

If you have questions, you are welcome to email me (jacksla1@boe.richmond.k12.ga.us). Please know that my school email will be checked periodically over the summer break.

Derivative Formulas

$$\frac{d}{dx} k = 0 \quad (1)$$

$$\frac{d}{dx} [f(x) \pm g(x)] = f'(x) \pm g'(x) \quad (2)$$

$$\frac{d}{dx} [k \cdot f(x)] = k \cdot f'(x) \quad (3)$$

$$\frac{d}{dx} [f(x)g(x)] = f(x)g'(x) + g(x)f'(x) \quad (4)$$

$$\frac{d}{dx} \left(\frac{f(x)}{g(x)} \right) = \frac{g(x)f'(x) - f(x)g'(x)}{[g(x)]^2} \quad (5)$$

$$\frac{d}{dx} f(g(x)) = f'(g(x)) \cdot g'(x) \quad (6)$$

$$\frac{d}{dx} x^n = nx^{n-1} \quad (7)$$

$$\frac{d}{dx} \sin x = \cos x \quad (8)$$

$$\frac{d}{dx} \cos x = -\sin x \quad (9)$$

$$\frac{d}{dx} \tan x = \sec^2 x \quad (10)$$

$$\frac{d}{dx} \cot x = -\csc^2 x \quad (11)$$

$$\frac{d}{dx} \sec x = \sec x \tan x \quad (12)$$

$$\frac{d}{dx} \csc x = -\csc x \cot x \quad (13)$$

$$\frac{d}{dx} e^x = e^x \quad (14)$$

$$\frac{d}{dx} a^x = a^x \ln a \quad (15)$$

$$\frac{d}{dx} \ln |x| = \frac{1}{x} \quad (16)$$

$$\frac{d}{dx} \sin^{-1} x = \frac{1}{\sqrt{1-x^2}} \quad (17)$$

$$\frac{d}{dx} \cos^{-1} x = \frac{-1}{\sqrt{1-x^2}} \quad (18)$$

$$\frac{d}{dx} \tan^{-1} x = \frac{1}{x^2+1} \quad (19)$$

$$\frac{d}{dx} \cot^{-1} x = \frac{-1}{x^2+1} \quad (20)$$

$$\frac{d}{dx} \sec^{-1} x = \frac{1}{|x|\sqrt{x^2-1}} \quad (21)$$

$$\frac{d}{dx} \csc^{-1} x = \frac{-1}{|x|\sqrt{x^2-1}} \quad (22)$$

Integral Formulas

$$\int dx = x + C \quad (1)$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C \quad (2)$$

$$\int \frac{dx}{x} = \ln |x| + C \quad (3)$$

$$\int e^x dx = e^x + C \quad (4)$$

$$\int a^x dx = \frac{1}{\ln a} a^x + C \quad (5)$$

$$\int \ln x dx = x \ln x - x + C \quad (6)$$

$$\int \sin x dx = -\cos x + C \quad (7)$$

$$\int \cos x dx = \sin x + C \quad (8)$$

$$\int \tan x dx = -\ln |\cos x| + C \quad (9)$$

$$\int \cot x dx = \ln |\sin x| + C \quad (10)$$

$$\int \sec x dx = \ln |\sec x + \tan x| + C \quad (11)$$

$$\int \csc x dx = -\ln |\csc x + \cot x| + C \quad (12)$$

$$\int \sec^2 x dx = \tan x + C \quad (13)$$

$$\int \csc^2 x dx = -\cot x + C \quad (14)$$

$$\int \sec x \tan x dx = \sec x + C \quad (15)$$

$$\int \csc x \cot x dx = -\csc x + C \quad (16)$$

$$\int \frac{dx}{\sqrt{a^2-x^2}} = \sin^{-1} \frac{x}{a} + C \quad (17)$$

$$\int \frac{dx}{a^2+x^2} = \frac{1}{a} \tan^{-1} \frac{x}{a} + C \quad (18)$$

$$\int \frac{dx}{x\sqrt{x^2-a^2}} = \frac{1}{a} \sec^{-1} \frac{|x|}{a} + C \quad (19)$$