

AP CALCULUS AB
SUMMER WORK
2025-2026

Dearest students of AP Calculus AB,

During the past year in Honors Pre-Calculus, you had the opportunity to prepare and review the algebra skills needed to work with Calculus topics. Hopefully, you remember our first key topic in Calculus from the spring, the derivative. We will look at this topic again and expand on what you already know. Before we can get into the derivative and beyond, there are a few topics that I want to make sure you're locked in on.

The reason for these questions is to review! Please complete all the work from this packet on separate sheets of paper and please use graph paper where needed. Please be ready to turn this assignment in on the first day of class. In addition to these topics, please review/re-learn the unit circle with all the special angles and the fraction values. For this class, you will need your own graphing calculator (I recommend the TI-84.)

I look forward to a wonderful year... for now, happy summer!

Sincerely,

Selma Solera-Corbin
Mathematics Department Chairperson
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- 1) Determine the slope between $(-2, 5)$ and $(6, -7)$.
- 2) If $m = \frac{2}{3}$ and the line goes through $(x, 8)$ and $(9, -20)$, find x .
- #'s 3-6, Write the equation of the line in point slope form.
- 3) Write the equation of the line given $m = \frac{-3}{4}$ and goes through the point $(-6, 2)$.
- 4) Write the equation of the line that contains the points $(4, 9)$ and $(-1, 1)$.
- 5) Write the equation of the line that contains $(-4, 7)$ and is parallel to $y = 3x + 6$.
- 6) Write the equation of the line that contains $(4, 0)$ and is perpendicular to $y = -5x - 8$.
- 7) Sketch the graph of $3x - 5y = 15$.
- 8) If $f(x) = 4x^2 + 2$, find $f(2)$, $f(x-5)$ and $f(x+h)$.
- 9) Sketch the graph of $f(x) = \begin{cases} x^2, & x < 2 \\ -x + 6, & x \geq 2 \end{cases}$.
- 10) Sketch the graph of $f(x) = \begin{cases} x^2; & x < 2 \\ 4x - 4; & x \geq 2 \end{cases}$.
- 11) Sketch the graph of $f(x) = \begin{cases} x^2; & x < 2 \\ \frac{-1}{2}x - 4; & x \geq 2 \end{cases}$.
- 12) Solve: $x^2 + 8x + 12 = 0$
- 13) Solve: $4x^2 - 12x = -8$

There's more!

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14) Solve: $\frac{4}{x+1} - \frac{5}{x-1} = 0$

15) Solve: $4 \sin^2 x - 3 = 0 \quad 0 \leq x < 2\pi$

Find the points of intersection of the graphs (Please use Algebra)

16) $y = 3x + 4$
 $2x - 3y = 12$

17) $x^2 + y^2 = 25$
 $2x + y = 5$

#'s 18-20, Use your graphing calculator (set in radians) for the following questions.

$f(x) = e^x$ and $g(x) = \cos x$ over the interval of $[-4, 2]$ only.

18) Determine the point(s) of intersection using 4 decimal places

19) Determine the zeros of each function.

20) Determine the x value that makes $f(x) = 1.5$

and finally, fill in and memorize the unit circle like you were told in Algebra II!

Unit Circle, Fill in the blank

