

Summer Assignments for students to take AP Calculus AB in upcoming school year

Summer Assignment for students
Preparing to enroll in
AP Calculus AB

Due
August 16, 2019

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Your upcoming AP Calculus AB course will begin with a review of pertinent precalculus concepts and an Introduction to Limits.

If your Pre-Calculus class did not cover an Introduction to Limits, don't worry, you will have a proper and full introduction in AP Calculus AB.

The type of functions you will use in AP Calculus AB:

Linear, quadratic, higher order polynomials, rational, radical, exponential, logarithmic, trigonometric

Thus, your review will include some basic Algebra 1, Algebra 2 and Pre-Calculus

Show all work. No calculator may be used except for #8.

All assignments due August 16, 2019.

To get help:

- see precalculus on Khan Academy. You may have to create an account with Khan Academy, if you haven't already.
- **Send an email to woodhouset@duvalschools.org**

1. Given the points (2, 3) and (-1, 6) write the equation in of the line through the points in slope intercept form.

Summer Assignments for students to take AP Calculus AB in upcoming school year

2. Perform the operations, simply and leave no negative exponents.

$$(a) \frac{1}{3} - 2 =$$

$$(b) \frac{2}{9} + \frac{5}{6} =$$

$$(c) x + \frac{1}{1-x} =$$

$$(d) \frac{3}{x-2} - \frac{2}{x+1} =$$

$$(e) \frac{x+2}{x^2} \cdot \frac{x+1}{x-3} =$$

Summer Assignments for students to take AP Calculus AB in upcoming school year

$$(f) \frac{\frac{2}{5}}{\frac{3}{10}} =$$

$$(g) \frac{5x^3}{\frac{3}{2}} =$$

$$(h) \frac{\frac{1}{x+h} - \frac{1}{x}}{h} =$$

Summer Assignments for students to take AP Calculus AB in upcoming school year

3. Use the properties of exponents to simplify. Rewrite any negative exponents.

(a) $(-8)^{\frac{2}{3}} =$

(b) $(27^{-1})^{\frac{1}{3}} =$

(c) $4x^{-3}x^2 =$

(d) $\frac{(2x^2)^{-3}}{(3x^{-4})^2} =$

(e) $\left(\frac{x(x+1)^{-1}}{\sqrt[3]{x-2}}\right)^{-2} =$

4. Solve each equation for x .

(a) $2x^2 - 7 = 11$

(b) $2x^3 + 21 = 5$

(c) $5x^2 + 8 = 2x^2 + 5$

Summer Assignments for students to take AP Calculus AB in upcoming school year

5. $y = x^3 + 2x^2 + 4x + 8$ is a **cubic function** and has degree 3.

(a) Find all roots. (Use grouping.)

(b) Determine the intervals on which the polynomial is positive and the intervals on which the polynomial is negative.

6.

$y = -16x^2 + 32x + 48$ is a **quadratic function** and has degree 2. Its graph is a **parabola**.

(a) Find the y -intercept.

(b) Find the x -intercept(s). (The equation factors easily.)

(c) Determine the intervals on which the polynomial is positive and the intervals on which the polynomial is negative.

Summer Assignments for students to take AP Calculus AB in upcoming school year

7.

Let $s(t) = -16t^2 + 144$ be the position in feet of a falling object t seconds after it was dropped.

(a) Find the height from which the object was dropped.

(b) At what time did the object hit the ground?

8.

Let $v(t) = -9.8t + 24.5$ be the velocity in meters per second of a moving object t seconds after it was thrown straight up into the air.

(a) What was the initial velocity?

(b) At what time did the object reach its maximum height and begin to descend?

Summer Assignments for students to take AP Calculus AB in upcoming school year

9.

Fill in the table from memory.

θ	$\cos \theta$	$\sin \theta$	$\tan \theta$
$0 = 0^\circ$			
$\frac{\pi}{6} = 30^\circ$			
$\frac{\pi}{4} = 45^\circ$			
$\frac{\pi}{3} = 60^\circ$			
$\frac{\pi}{2} = 90^\circ$			
$\pi = 180^\circ$			
$\frac{3\pi}{2} = 270^\circ$			
$\frac{5\pi}{6} = 150^\circ$			
$\frac{4\pi}{3} = 240^\circ$			

10. a.

Given that $\tan \theta = 3$, find the exact values of the remaining five trigonometric functions of θ . [Hint: draw the appropriate triangle.]

b.

Find the cosine, sine, and tangent of θ .

