







AP Calculus AB - Unit 1 - Limits

You will be awarded up to 4 points for each night of homework. At the end of the unit, you will earn a single completion grade.

Monday	Tuesday	Wednesday	Thursday	Friday
1/22	1/23	1/24	1/25	1/26
		Introductions & Preview of Calculus HW: Unit Circle WS 	1.2 Finding Limits Graphically and Numerically HW: pp.54-56 (3,7,9,15-25 odds, 29,31) 	1.3A Evaluating Limits Analytically HW: pp.67-69 (5-23 odds, 37,39,45-53 odds) 
1/29	1/30	1/31	2/1	2/2
Quiz: <i>Limits G,N</i> 1.3B Evaluating Limits Analytically HW: pp.67-69 (27-35 odds, 55,57,59,65,67, 69,85) 	1.4 Continuity and One-Sided Limits HW: pp.78-80 (3,7,9,17,19, 21,23,27,37, 39,47,49,63,91, 93) 	Quiz: <i>Limits G,N,A</i> 1.5 Infinite Limits HW: pp. 88-90 (1-49 every other odd) 	Unit 1 Review Day HW: STUDY FOR YOUR TEST!	Unit 1 Test: Limits

HW Grade: _____/24 = _____

Khan Academy Objective Set - Due Thursday, February 1st at 11:59pm

For each objective listed below, you are responsible for reaching the practiced level.

Reminder: Be sure to have signed up for the correct Google Classroom and Khan Academy class before working through these objectives!

1. Limits from graphs
2. Limits from tables
3. One-sided limits from graphs
4. One-sided limits from tables
5. Connecting limits and graphical behavior
6. Continuity at a point
7. Continuity over and interval
8. Continuity and common functions
9. Limits of combined functions
10. Limits of composite functions
11. Direct substitution
12. Direct substitution with limits that don't exist
13. Limits by factoring
14. Limits using conjugates limits of trigonometric functions
15. Infinite limits and graphs
16. Analyze unbounded limits
17. Classify discontinuities
18. Removable discontinuities
19. Conclusions from direct substitution (finding limits)
20. Next steps after indeterminate form (finding limits)

Unit Problem Set - Due Friday, February 2nd

Complete the following problems on a separate sheet of paper. Be sure to show all work and circle each answer.

1. Complete the table and use the result to estimate the limit.

$$\lim_{x \rightarrow 0} \frac{\frac{8}{x+2} - 4}{x}$$

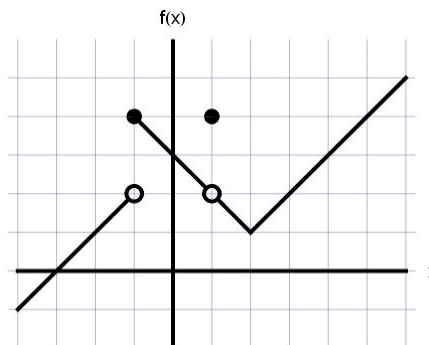
x	-0.1	-0.01	-0.001	0.001	0.01	0.1
$f(x)$						

2. Use the graph to determine each limit.

a. $\lim_{x \rightarrow 1} f(x)$

b. $\lim_{x \rightarrow 2} f(x)$

c. $\lim_{x \rightarrow -1} f(x)$



3. Find each limit, if it exists.

a. $\lim_{x \rightarrow 1} 8 - x$

b. $\lim_{x \rightarrow -2} \frac{t+2}{t^2-4}$

c. $\lim_{x \rightarrow 0} \frac{1-\cos x}{\sin x}$

d. $\lim_{x \rightarrow 0} \frac{\sin 7x}{x}$

4. Evaluate each limit given $\lim_{x \rightarrow c} f(x) = -\frac{3}{4}$ and $\lim_{x \rightarrow c} g(x) = \frac{2}{3}$.

a. $\lim_{x \rightarrow c} [f(x)g(x)]$

b. $\lim_{x \rightarrow c} [f(x) + 2g(x)]$

5. Find the limit (if it exists). If the limit does not exist, explain why.

a. $\lim_{x \rightarrow 3^-} \frac{|x-3|}{x-3}$

b. $\lim_{x \rightarrow 1} g(x)$ where $g(x) = \begin{cases} \sqrt{1-x}, & x \leq 1 \\ x+1, & x > 1 \end{cases}$

6. Describe the discontinuity in each function below. Show all work that leads to your answer.

a. $f(x) = \frac{3x^2 - x - 2}{x - 1}$

b. $f(x) = \frac{x+1}{2x^2-2}$

7. Determine the value of c such that the function is continuous on the entire real number line.

$$f(x) = \begin{cases} x + 3, & x \leq 2 \\ cx + 6, & x > 2 \end{cases}$$

8. Use the Intermediate Value Theorem to Show that $f(x) = 2x^3 - 3$ has a zero on the interval $[1, 2]$.

9. Find each one-sided limit. Be sure to justify your answer.

a. $\lim_{x \rightarrow -2^-} \frac{2x^2 + x + 1}{x + 2}$

b. $\lim_{x \rightarrow 2^+} \frac{1}{\sqrt[3]{x^2 - 4}}$