This key should allow you to understand why you choose the option you did (beyond just getting a question right or wrong). More instructions on how to use this key can be found here.

If you have a suggestion to make the keys better, please fill out the short survey here.

Note: This key is auto-generated and may contain issues and/or errors. The keys are reviewed after each exam to ensure grading is done accurately. If there are issues (like duplicate options), they are noted in the offline gradebook. The keys are a work-in-progress to give students as many resources to improve as possible.

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1. Evaluate the limit below, if possible.

$$\lim_{x\to 8} \frac{\sqrt{6x-12}-6}{2x-16}$$

The solution is 0.250

A. 0.083

You likely memorized how to solve the similar homework problem and used the same formula here.

B. ∞

You likely believed that since the denominator is equal to 0, the limit is infinity.

C. 1.225

You likely tried to use a shortcut to find the limit of a function that only works for when the numerator/denominator are polynomials.

D. 0.250

* This is the correct option.

E. None of the above

If you got a limit that does not match any of the above, please contact the coordinator.

General Comment: General comments: It is difficult to imagine the graph of this function, so you need to test values close to $x = 8$.

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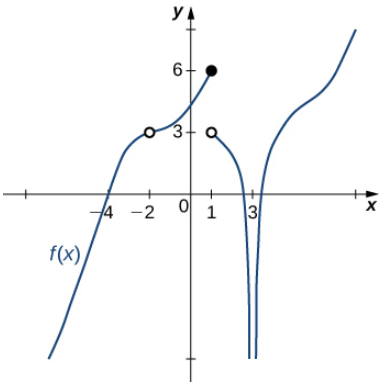
2. For the graph below, find the value(s) a that makes the limit true: $\lim_{x\to a} f(x) = -\infty$.



The solution is Multiple a make the limit true.

A. -2

B. $-\infty$

C. 3

D. Multiple a make the limit true.

E. No a make the limit true.

General Comment: General Comments: There can be multiple a values that make the limit true! For the limit, draw a horizontal line and determine if an x value makes the limit true.

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3. To estimate the one-sided limit of the function below as x approaches 7 from the right, which of the following sets of numbers should you use?

$$\frac{\frac{7}{x}-1}{x-7}$$

The solution is $\{7.1000, 7.0100, 7.0010, 7.0001\}$

A. $\{7.0000, 6.9000, 6.9900, 6.9990\}$

If we get $\frac{0}{0}$ or $\frac{\infty}{\infty}$, the value 7 doesn't help us estimate the limit.

B. $\{6.9000, 6.9900, 6.9990, 6.9999\}$

These values would estimate the limit of 7 on the left.

C. $\{7.1000, 7.0100, 7.0010, 7.0001\}$

This is correct!

D. $\{7.0000, 7.1000, 7.0100, 7.0010\}$

If we get $\frac{0}{0}$ or $\frac{\infty}{\infty}$, the value 7 doesn't help us estimate the limit.

E. $\{6.9000, 6.9900, 7.0100, 7.1000\}$

These values would estimate the limit at the point and not a one-sided limit.

General Comment: General Comments: To evaluate a one-sided limit, we want to put numbers close to the limit. We can't use the limit value itself if it results in $\frac{0}{0}$ or $\frac{\infty}{\infty}$

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4. Evaluate the one-sided limit of the function $f(x)$ below, if possible.

$$\lim_{x\to -4^+} \frac{-6}{(x-4)^9} + 2$$

The solution is $f(-4)$

A. ∞

B. $f(-4)$

C. $-\infty$

D. The limit does not exist

E. None of the above

General Comment: General comments: You should be able to graph the rational function displayed. If not, go back to Module 7 to learn about the general shape of rational functions.

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0. Based on the information below, which of the following statements is always true? As x approaches 2, $f(x)$ approaches 16.325. The solution is None of the above are always true.

A. $f(16) = 2$

B. $f(2) = 16$

C. $f(16)$ is close to or exactly 2

D. $f(2)$ is close to or exactly 16

E. None of the above are always true.

General Comment: General comments: The limit tells you what happens as the x-values approach 2. It says **absolutely nothing** about what is happening exactly at $f(x)$!
