Computing limits

Answer key

1. Compute the following limit using the properties of limits.

$\lim_{x \to -4} (2)^4$

16

2. Compute the following limit using the properties of limits.

$\lim_{x \to 6} (-2x - 7)$

-19

3. Compute the following limit using the properties of limits.

$\lim_{x \to -4} (7x - 2)$

-30

4. Compute the following limit using the properties of limits.

$\lim_{x \to -7} \frac{x^2+16x+63}{x+7}$

2

5. Compute the following limit using the properties of limits.

$\lim_{x \to -4} \frac{x^2-6x-40}{x+4}$

-14

6. Compute the following limit using the properties of limits.

$\lim_{x \to -5} \frac{x^2-5x-50}{x+5}$

-15

7. Compute the following limit using the properties of limits.

$\lim_{x \to 1} \frac{1-x}{\sqrt{x}-1}$

-2

8. Compute the following limit using the properties of limits.

$\lim_{x \to 4} \frac{4-x}{\sqrt{x}-2}$

-4

9. Compute the following limit using the properties of limits.

$\lim_{x \to -9} \frac{|x+9|}{x+9}$

DNE

10. Compute the following limit using the properties of limits.

$\lim_{x \to 5} \frac{|x-5|}{x-5}$

DNE

Computing limits of piecewise functions

Answer key

1. Evaluate the following limits.

$$f(x) = \begin{cases} \sqrt{x+3} - 3 \ , & x > -2 \\ 6x + 13 \ , & x \leq -2 \end{cases}$$

$\lim_{x \to -2^-} f(x) = 1$
$\lim_{x \to -2^+} f(x) = -2$
$\lim_{x \to -2} f(x) = \text{DNE}$

2. Evaluate the following limits.

$$f(x) = \begin{cases} 3x + 4 \ , & x < 0 \\ -x^2 + 6 \ , & x \geq 0 \end{cases}$$

$\lim_{x \to 0^-} f(x) = 4$
$\lim_{x \to 0^+} f(x) = 6$
$\lim_{x \to 0} f(x) = \text{DNE}$

3. Evaluate the following limits.

$$f(x) = \begin{cases} 2x^2 - 205 \ , & x < 10 \\ \sqrt{x-1} - 8 \ , & x \geq 10 \end{cases}$$

$\lim_{x \to 10^-} f(x) = -5$
$\lim_{x \to 10^+} f(x) = -5$
$\lim_{x \to 10} f(x) = -5$

4. Evaluate the following limits.

$$f(x) = \begin{cases} \sqrt{x-1} + 1 \ , & x < 2 \\ \sqrt{x-1} + 2 \ , & x \geq 2 \end{cases}$$

$\lim_{x \to 2^-} f(x) = 2$
$\lim_{x \to 2^+} f(x) = 3$
$\lim_{x \to 2} f(x) = \text{DNE}$

5. Evaluate the following limits.

$$f(x) = \begin{cases} 6x + 19 \ , & x < -2 \\ 5x + 17 \ , & x \geq -2 \end{cases}$$

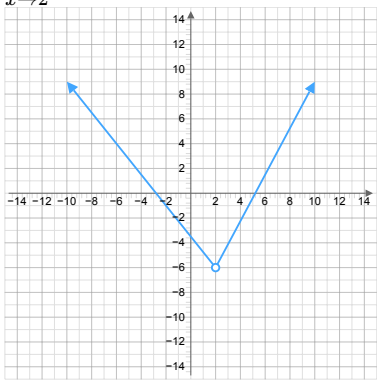
$\lim_{x \to -2^-} f(x) = 7$
$\lim_{x \to -2^+} f(x) = 7$
$\lim_{x \to -2} f(x) = 7$

Find limits using a graph

Answer key

1. Find the following limit.

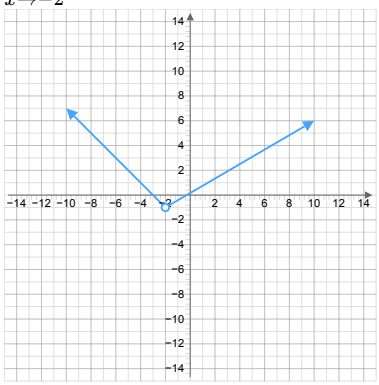
$\lim_{x \to 2} f(x)$



-6

2. Find the following limit.

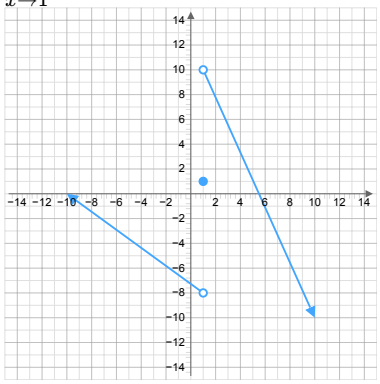
$\lim_{x \to -2} f(x)$



-1

3. Find the following limit.

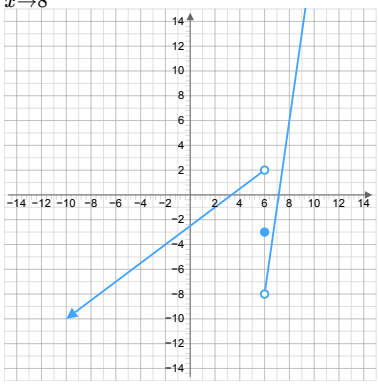
$\lim_{x \to 1^-} f(x)$



-8

4. Find the following limit.

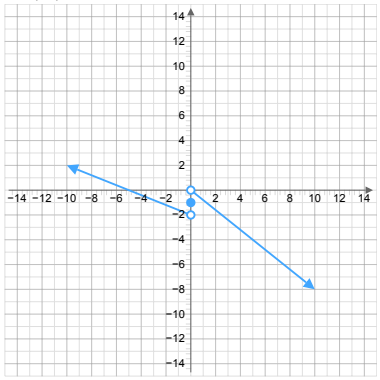
$\lim_{x \to 8} f(x)$



6

5. Find the value of the function at the given point.

$f\,(5)$



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