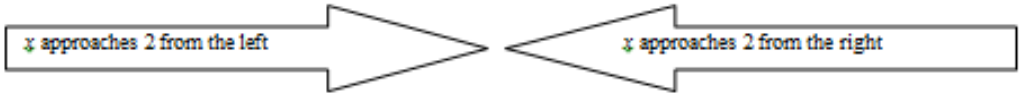
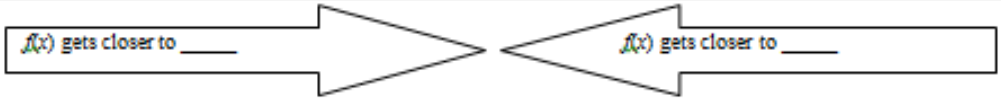
Calculus 1.1 Practice #1 Name: _____ Date_____
Understanding Limits Numerically and Graphically

In Problems 1-3, complete the table to investigate the limit.

1. $\lim_{x\to 2} \dfrac{x^2-4}{x-2}$



x	1.99	1.999	1.9999	2	2.0001	2.001	2.01
$f(x)=\dfrac{x^2-4}{x-2}$							



The limit of $f(x) = \dfrac{x^2-4}{x-2}$ as x approaches 2 equals _____.

2. $\lim_{x\to 3} \dfrac{1}{x-2} =$

x	2.99	2.999	2.9999	3	3.0001	3.001	3.01
$f(x)=\dfrac{1}{x-2}$							

The limit of $f(x) = \dfrac{1}{x-2}$ as x approaches 3 equals _____.

3. $\lim_{x\to 0} \dfrac{x}{x^2+1}$

x	−0.01	−0.001	−0.0001	0	0.0001	0.001	0.01
$f(x)=\dfrac{x}{x^2+1}$							

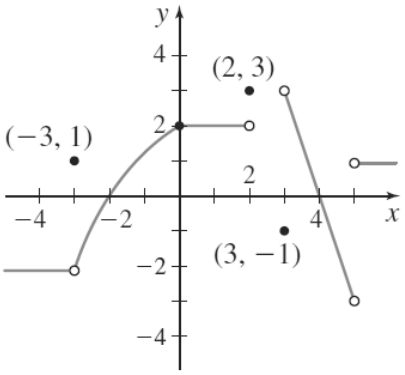
The limit of $f(x) = \dfrac{x}{x^2+1}$ as x approaches 0 equals _____.

Calculus 1.1 Practice #2 Name: _____ Date_____

Understanding Limits Numerically and Graphically

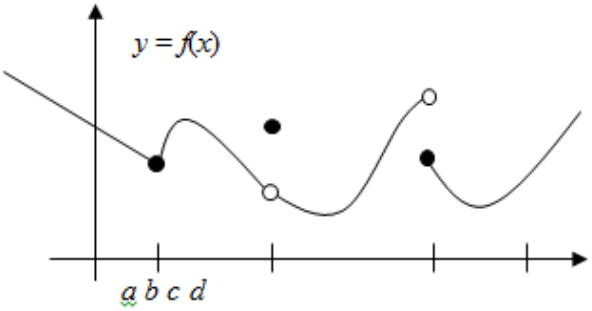
Use the graph of f to find the indicated limit or function value.

1. $\lim_{x\to -4^-} f(x) =$ _____
2. $\lim_{x\to -4^+} f(x) =$ _____
3. $\lim_{x\to -4} f(x) =$ _____
4. $f(-4) =$ _____
5. $\lim_{x\to 0} f(x) =$ _____
6. $\lim_{x\to -3} f(x) =$ _____
7. $\lim_{x\to 5^-} f(x) =$ _____
8. $\lim_{x\to -5^+} f(x) =$ _____
9. $\lim_{x\to -5} f(x) =$ _____
10. $f(2) =$ _____
11. $\lim_{x\to -2^-} f(x) =$ _____
12. $f(-3) =$ _____

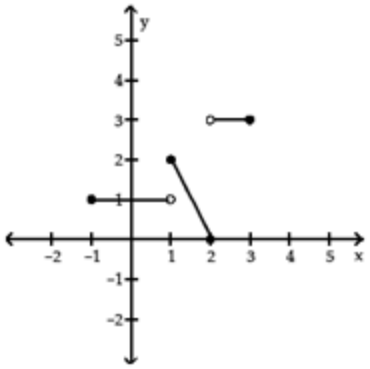


For each of the following, determine whether the limit exists on the basis of the graph of $y = f(x)$. The domain of f is the set of real numbers.

13. $\lim_{x\to a} f(x)$
14. $\lim_{x\to b} f(x)$
15. $\lim_{x\to c^-} f(x)$
16. $\lim_{x\to c^+} f(x)$
17. $\lim_{x\to c} f(x)$
18. $\lim_{x\to d} f(x)$



19. Use the graph to estimate each limit, or state that the limit does not exist.



a. $\lim_{x\to 1^-} f(x)$ b. $\lim_{x\to 1^+} f(x)$ c. $\lim_{x\to 1} f(x)$

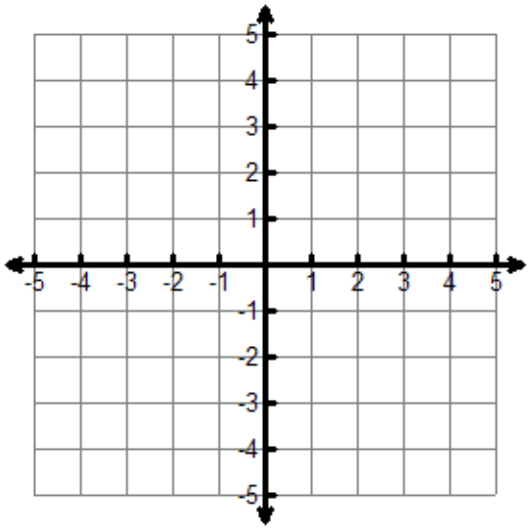
d. $\lim_{x\to 0^-} f(x)$ e. $\lim_{x\to 0^+} f(x)$ f. $\lim_{x\to 0} f(x)$

Calculus 1.1 Practice #3 Name: _____ Date_____

Understanding Limits Numerically and Graphically

Use the given function to find the indicated limits, or state that the limit does not exist. Verify your answers graphically.

1. $f(x)=\begin{cases}(x+2)^2 & \text{when } x<0\\ -\sqrt{x}+4 & \text{when } x\geq 0\end{cases}$

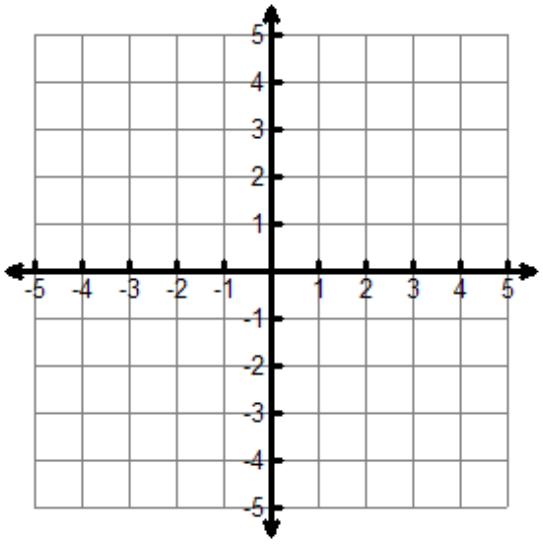


a. $\lim\limits_{x\to 0^-} f(x)$

b. $\lim\limits_{x\to 0^+} f(x)$

c. $\lim\limits_{x\to 0} f(x)$

2. $f(x)=\begin{cases}x^2-4 & x\leq 2\\ x-3 & x>2\end{cases}$



a. $\lim\limits_{x\to 2^-} f(x)$

b. $\lim\limits_{x\to 2^+} f(x)$

c. $\lim\limits_{x\to 2} f(x)$

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Understanding Limits Numerically and Graphically

3. $f(x) = \begin{cases} -x & x < 1 \\ 1 & x = 1 \\ x^2 + 1 & x > 1 \end{cases}$

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

b. $\lim_{x \to 1^+} f(x)$

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