Kuta Software - Infinite Calculus

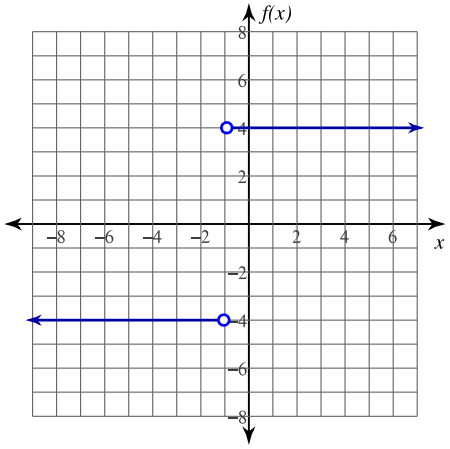
Name_____

Evaluating Limits

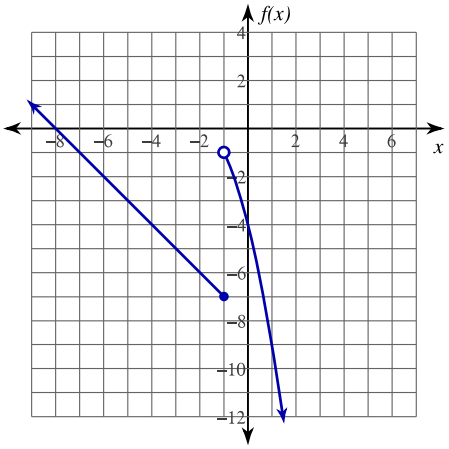
Date_____ Period____

Evaluate each limit.

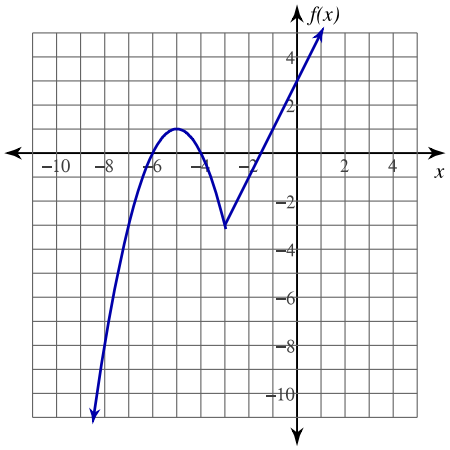
1) $\lim\limits_{x \to -1^+} \dfrac{4x+4}{|x+1|}$



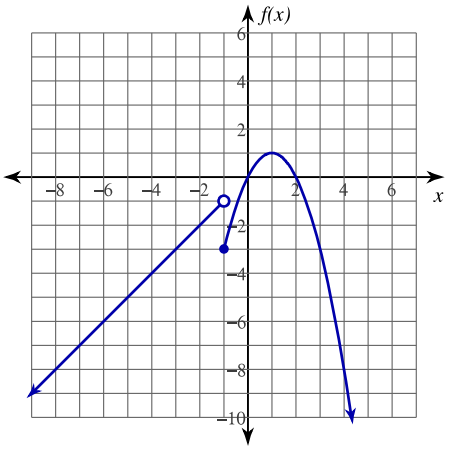
2) $\lim\limits_{x \to -1^-} f(x),\ f(x) = \begin{cases} -x-8, & x \le -1 \\ -x^2-4x-4, & x > -1 \end{cases}$



3) $\lim\limits_{x \to -3} f(x),\ f(x) = \begin{cases} -x^2-10x-24, & x \le -3 \\ 2x+3, & x > -3 \end{cases}$

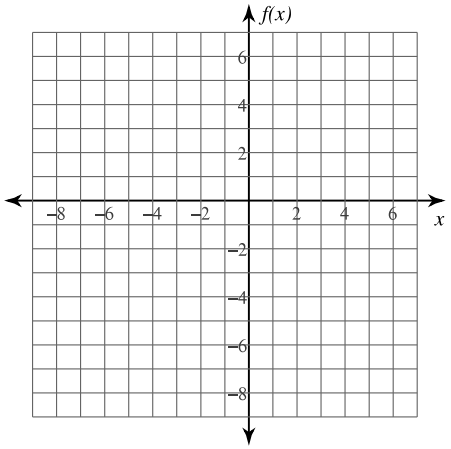


4) $\lim\limits_{x \to -1} f(x),\ f(x) = \begin{cases} x, & x < -1 \\ -x^2+2x, & x \ge -1 \end{cases}$

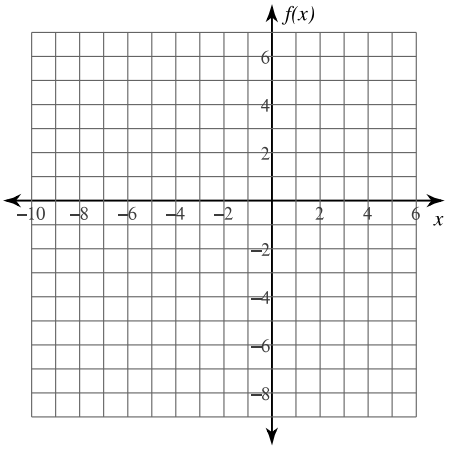


Evaluate each limit. You may use the provided graph to sketch the function.

5) $\lim\limits_{x\to -1^-} f(x),\ f(x)=\begin{cases} -x-3, & x\le -1 \\ x+1, & x>-1 \end{cases}$



6) $\lim\limits_{x\to -2} f(x),\ f(x)=\begin{cases} -x^2-4x-5, & x\le -2 \\ -1, & x>-2 \end{cases}$



Evaluate each limit.

7) $\lim\limits_{x\to 0^+} f(x),\ f(x)=\begin{cases} 1, & x\le 0 \\ -x^2+4x-3, & x>0 \end{cases}$

8) $\lim\limits_{x\to 0^-} \dfrac{|x|}{x}$

9) $\lim\limits_{x\to 0^+} \lfloor -2x+1 \rfloor$

10) $\lim\limits_{x\to 1} f(x),\ f(x)=\begin{cases} \dfrac{x}{2}+\dfrac{9}{2}, & x<1 \\ x^2-6x+10, & x\ge 1 \end{cases}$

11) $\lim\limits_{x\to -1} \dfrac{3|x+1|}{x+1}$

12) $\lim\limits_{x\to -2} f(x),\ f(x)=\begin{cases} x^2, & x\le -2 \\ -\dfrac{x}{2}+3, & x>-2 \end{cases}$

Critical thinking questions:

13) Give an example of a two-sided limit of a piecewise function where the limit does not exist.

14) Given an example of a two-sided limit of a function with an absolute value where the limit does not exist.

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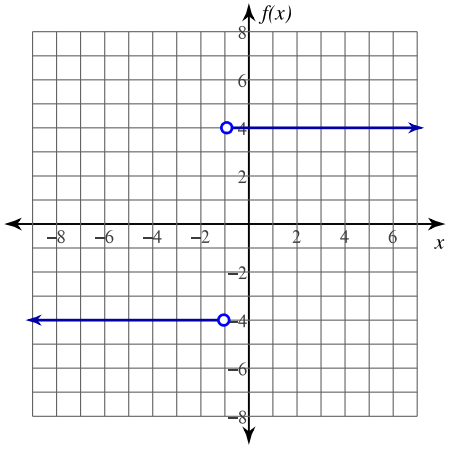

4

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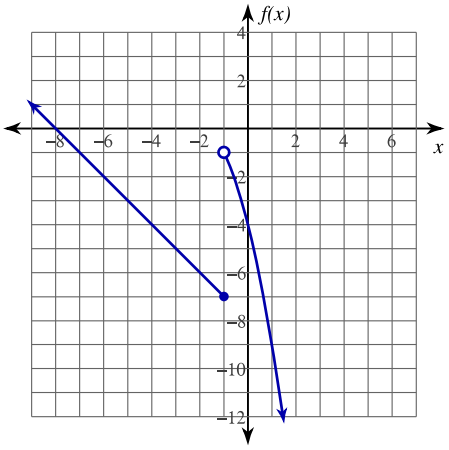

−7

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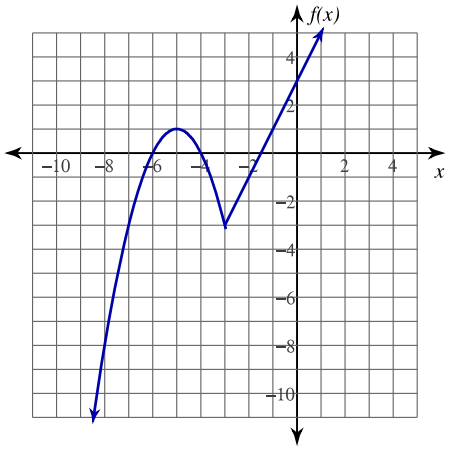

−3

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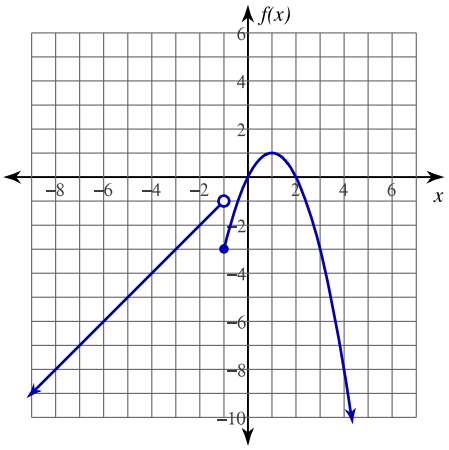

Does not exist.

Evaluate each limit. You may use the provided graph to sketch the function.

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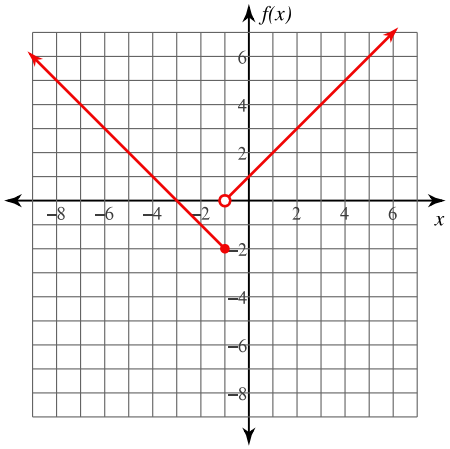

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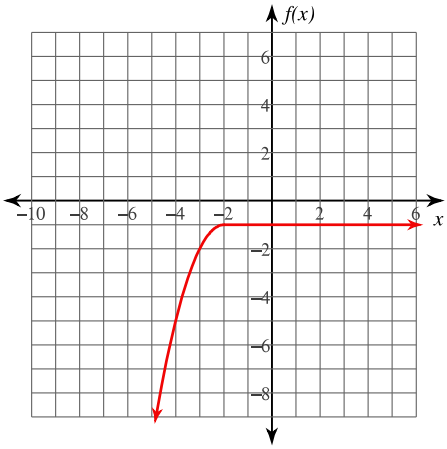

-1

Evaluate each limit.

7) $\lim\limits_{x\to 0^+} f(x),\ f(x)=\begin{cases}1, & x\le 0\\ -x^2+4x-3, & x>0\end{cases}$

-3

8) $\lim\limits_{x\to 0^-} \dfrac{|x|}{x}$

-1

9) $\lim\limits_{x\to 0^+} \left\lfloor -2x+1 \right\rfloor$

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10) $\lim\limits_{x\to 1} f(x),\ f(x)=\begin{cases}\dfrac{x}{2}+\dfrac{9}{2}, & x<1\\ x^2-6x+10, & x\ge 1\end{cases}$

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11) $\lim\limits_{x\to -1} \dfrac{3|x+1|}{x+1}$

Does not exist.

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Critical thinking questions:

13) Give an example of a two-sided limit of a piecewise function where the limit does not exist.

Many answers. Ex: $\lim\limits_{x\to 1} f(x),\ f(x)=\begin{cases}0, & x<1\\ x, & x\ge 1\end{cases}$

14) Given an example of a two-sided limit of a function with an absolute value where the limit does not exist.

Many answers. Ex: $\lim\limits_{x\to 0} \dfrac{|x|}{x}$