1.9 Connecting Multiple Representations of Limits

Calculus   Name: _____

Evaluate each limit.

1. $\lim\limits_{x\to 3^-} \dfrac{|x-3|}{x-3}$

2. $\lim\limits_{x\to 4^+} \dfrac{|x-4|}{x-4}$
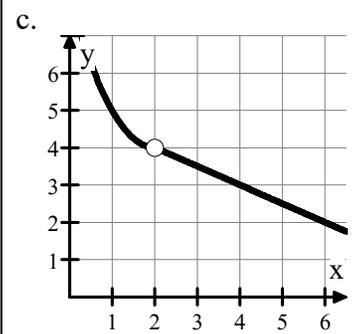
3. $\lim\limits_{x\to -5^-} \dfrac{x+5}{|x+5|}$

4. $\lim\limits_{x\to -6^+} \dfrac{|x+6|}{x+6}$

5. Let f be a piecewise function with two linear "pieces" where $\lim\limits_{x\to 2} f(x) = 4$. Which of the following could represent the function f?

a.
$$f(x) = \begin{cases} \dfrac{x^2-4}{x-2}, & x \ne 2 \\ 3, & x = 2 \end{cases}$$

b.

x	1.8	1.9	1.999	2	2.001	2.1	2.2
$f(x)$	7.2	7.1	7.001	4	3.999	3.9	3.8

c.

6. If g is a piecewise function with two linear "pieces" such that $\lim\limits_{x\to 6} g(x)$ does not exist, which of the following could be representative of the function g?

a.
$$g(x) = \begin{cases} 7 - x, & x < 6 \\ 2x - 14, & x > 6 \end{cases}$$

b.

x	3	4	5	6	7	8	9
$g(x)$	$\dfrac{3}{2}$	2	$\dfrac{5}{2}$	2	1	-1	-3

c.

6c. Yes	6b. No	6a. Yes	5c. yes	5b. no	5a. yes	4. 1	3. −1	2. 1	1. −1

Answers to 1.9 CA #1