Calculus Chapter 2 Practice Test

Find the following limits. Show your reasoning analytically or graphically.

1. $\lim\limits_{x\to 2}(x^2 - x + 1)$

2. $\lim\limits_{x\to 1}\left(\dfrac{2x+1}{3x-2}\right)$

3. $\lim\limits_{x\to 1}(\sqrt{10x-1})$

4. $\lim\limits_{x\to 1}\left(\dfrac{x^2-x-2}{x-2}\right)$

5. $\lim\limits_{x\to 2}\left(\dfrac{x^2-x-2}{x-2}\right)$

6. $\lim\limits_{x\to 4}\left(\dfrac{\sqrt{x}-2}{x-4}\right)$

7. $\lim\limits_{x\to -3}\left(\dfrac{x^2-9}{x+3}\right)$

8. $\lim\limits_{x\to -3}\left(\dfrac{x^2-9}{2x^2+7x+3}\right)$

9. $\lim\limits_{x\to 9}\left(\dfrac{\sqrt{x}-3}{x-9}\right)$

10. $\lim\limits_{h\to 0} \dfrac{1}{h}\left(\dfrac{4}{3+h} - \dfrac{4}{3}\right)$

11. $\lim\limits_{x\to 5} \dfrac{|x-5|}{x-5}$

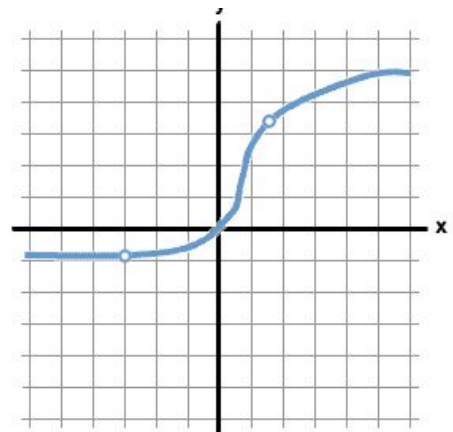**Using interval notation below, indicate where the following functions ARE continuous.**

12. $f(x) = \dfrac{x^3-2x^2+x}{x^2-1}$

13. $f(x) = \dfrac{x^2+3x-12}{7x}$

14. $f(x) = \dfrac{\sqrt{64-x^2}}{x-12}$

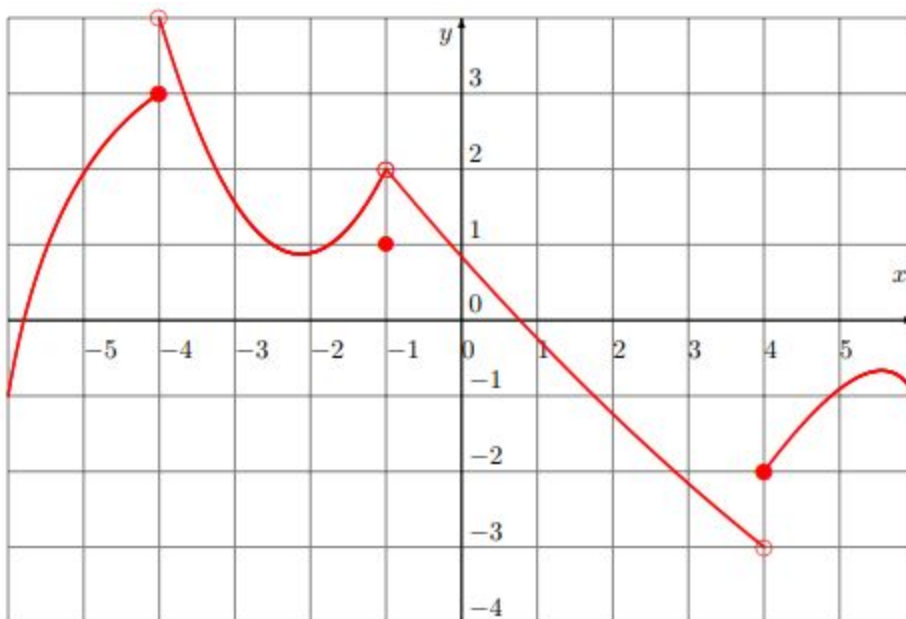**Write the following sum in sigma notation:** $8 + 15 + 22 + 29 + 36$

Is the function to the right continuous? Explain using the formal definition. (Three Parts).

Sketch the graph of a function q for which: $\lim\limits_{q \to 3^+} q(x) = 2$ **and** $\lim\limits_{q \to 3^-} q(x) = -2$

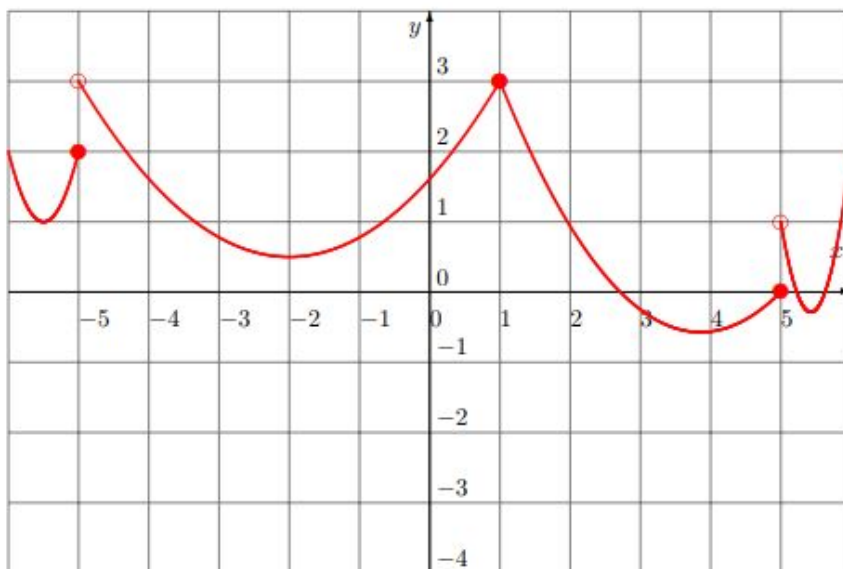**Find** $\lim\limits_{h \to 0} \dfrac{f(-3+h) - f(-3)}{h}$ **if** $f(x) = 2x - 7$

Consider the following function defined by its graph:

Find the following limits:

a) $\lim\limits_{x \to -1^-} f(x)$ b) $\lim\limits_{x \to -1^+} f(x)$ c) $\lim\limits_{x \to -1} f(x)$ d) $\lim\limits_{x \to -4} f(x)$ e) $\lim\limits_{x \to 4} f(x)$
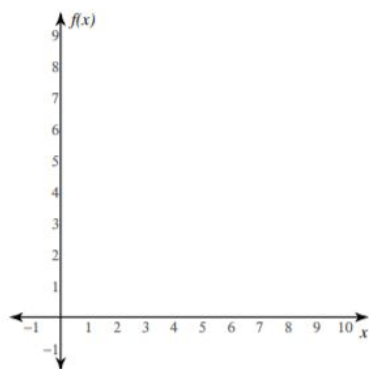
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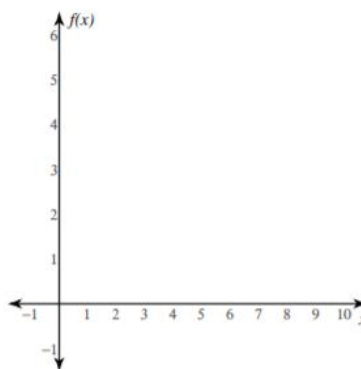

Find the following limits:

a) $\lim\limits_{x \to 1^-} f(x)$ b) $\lim\limits_{x \to 1^+} f(x)$ c) $\lim\limits_{x \to 1} f(x)$ d) $\lim\limits_{x \to -5} f(x)$ e) $\lim\limits_{x \to 5} f(x)$

For each problem, use a left-hand riemann sum to approximate the area under the curve based on the values in the table. You may use the provided graph to sketch the function data and rectangles.

x	0	2	5	7	10
f(x)	2	3	5	7	8

x	0	4	6	7	10
f(x)	5	3	2	3	5

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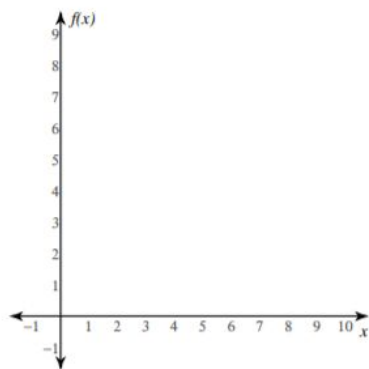
x	0	2	5	7	10
f(x)	2	3	5	7	8

x	0	4	6	7	10
f(x)	5	3	2	3	5