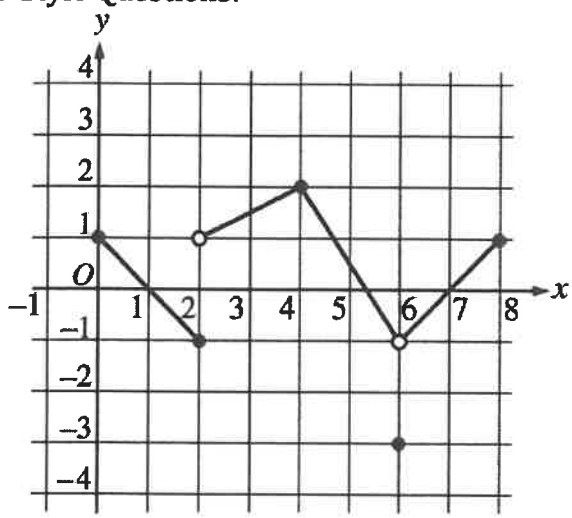
AP Style Questions:



The figure above shows the graph of the function f. Which of the following statements are true?

I. $\lim_{x \to 2^-} f(x) = f(2)$ ✓

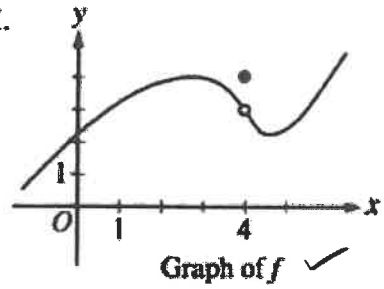
II. $\lim_{x \to 6^-} f(x) = \lim_{x \to 6^+} f(x)$ ✓

III. $\lim_{x \to 6} f(x) = f(6)$

I and II

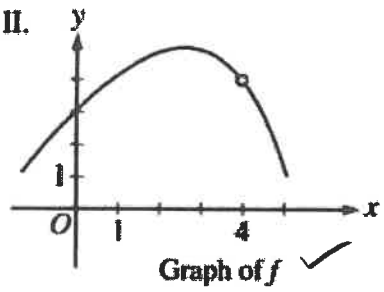
For which of the following does $\lim_{x \to 4} f(x)$ exist?

I.



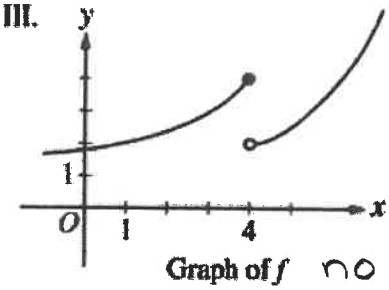
✓

II.



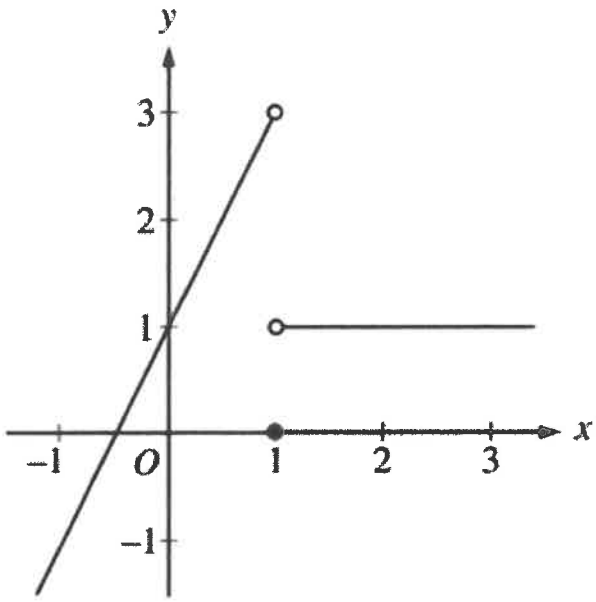
✓

III.



no

I and II



Graph of f

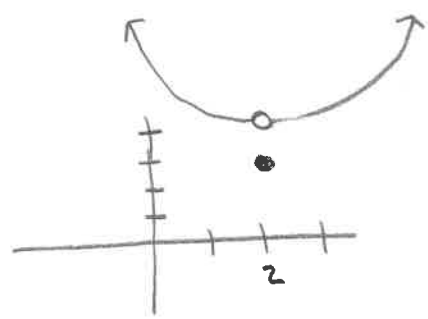
The graph of $y = f(x)$ is shown above. What is $\lim_{x \to 1} f(x)$? DNE

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

$$\lim_{x \to 2} \frac{(x+3)(x-2)}{(x+2)(x-2)}$$

$$\lim_{x \to 2} \frac{x+3}{x+2} = \frac{2+3}{2+2} = \frac{5}{4}$$

$$f(x) = \begin{cases} x^2 - 4x + 4 & \text{for } x < 2 \\ 3 & \text{for } x = 2 \\ \underline{x^2 - 4x + 8} & \text{for } x > 2 \end{cases}$$



Let f be the piecewise function defined above. The value of $\lim_{x \to 2^+} f(x)$ is

* shouldn't need to graph to answer ?

$$\lim_{x \to 2^+} f(x) = 2^2 - 4(2) + 8$$

$$= 4 - 8 + 8$$

$$= 4$$

$f(2) = 3$	$\lim_{x \to 2} f(x) = 4$
$g(2) = -6$	$\lim_{x \to 2} g(x) = -6$
$h(2) = -3$	$\lim_{x \to 2} h(x) = 2$

The table above gives selected values and limits of the functions f, g, and h. What is $\lim_{x \to 2} (h(x)(5f(x) + g(x)))$?

$$\lim_{x \to 2} \left[h(x)(5f(x) + g(x)) \right]$$

$$\lim_{x \to 2} \left[h(x) \cdot 5f(x) + h(x)g(x) \right]$$

$$\lim_{x \to 2} 5h(x)f(x) + \lim_{x \to 2} h(x)g(x)$$

$$5 \lim_{x \to 2} h(x)f(x) + \lim_{x \to 2} h(x)g(x)$$

$$5 \lim_{x \to 2} h(x) \lim_{x \to 2} f(x) + \lim_{x \to 2} h(x) \lim_{x \to 2} g(x)$$

$$5 \cdot 2 \cdot 4 + 2 \cdot (-6)$$

$$40 - 12$$

$$28$$