

## Day 5 Wrap Up

Name \_\_\_\_\_

1. Let  $f$  be the function defined by  $f(x) = \sqrt{|x-2|}$  for all  $x$ . Which of the following statements is true?

- (A)  $f$  is continuous but not differentiable at  $x = 2$ .
- (B)  $f$  is differentiable at  $x = 2$ .
- (C)  $f$  is not continuous at  $x = 2$ .
- (D)  $\lim_{x \rightarrow 2} f(x) \neq 0$
- (E)  $x = 2$  is a vertical asymptote of the graph of  $f$ .

2. 
$$f(x) = \begin{cases} x + 2 & \text{if } x \leq 3 \\ 4x - 7 & \text{if } x > 3 \end{cases}$$

Let  $f$  be the function given above. Which of the following statements are true about  $f$ ?

I.  $\lim_{x \rightarrow 3} f(x)$  exists.

II.  $f$  is continuous at  $x = 3$ .

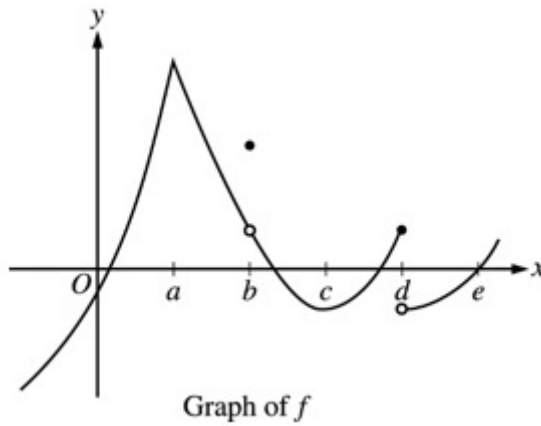
III.  $f$  is differentiable at  $x = 3$ .

- (A) None
- (B) I only
- (C) II only
- (D) I and II only
- (E) I, II, and III



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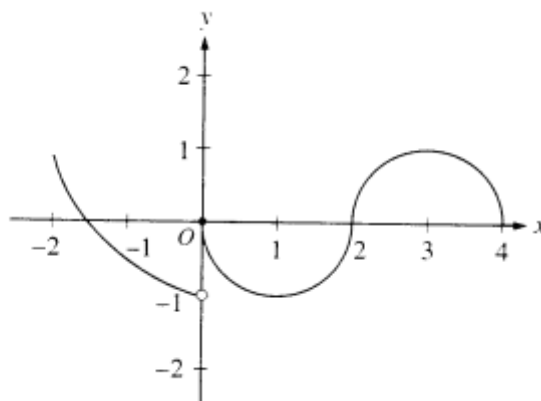
3.



The graph of a function  $f$  is shown above. At which value of  $x$  is  $f$  continuous, but not differentiable?

- (A)  $a$
- (B)  $b$
- (C)  $c$
- (D)  $d$
- (E)  $e$

4.



The graph of the function  $f$  shown in the figure above has a vertical tangent at the point  $(2, 0)$  and horizontal tangents at the points  $(1, -1)$  and  $(3, 1)$ . For what values of  $x$ ,  $-2 < x < 4$ , is  $f$  not differentiable?



**Day 5 Wrap Up**

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- (A) 0 only
- (B) 0 and 2 only
- (C) 1 and 3 only
- (D) 0, 1, and 3 only
- (E) 0, 1, 2, and 3
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5. Which of the following statements about the function  $f$ , if true, cannot be used to conclude that  $f$  is defined at  $x = 1$ ?

- (A)  $\lim_{x \rightarrow 1} f(x)$  exists.
- (B)  $f$  is continuous at  $x = 1$ .
- (C)  $f$  is differentiable at  $x = 1$ .
- (D) The line tangent to the graph of  $f$  at  $x = 1$  exists.
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