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) $\lim_{x \to 2} f(x) \neq 0$

(E) $x = 2$ is a is a vertical asymptote of the graph of f.

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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. $\lim_{x \to 3} f(x)$ 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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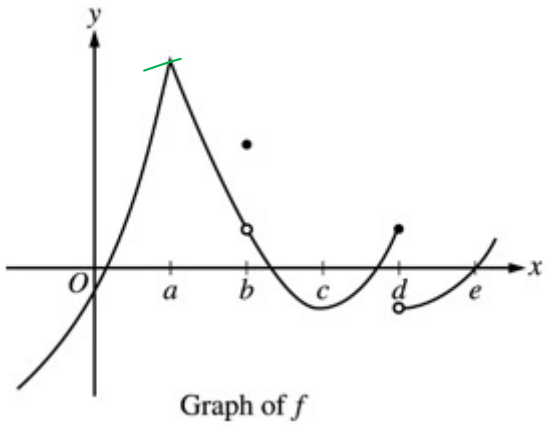
3.



Graph of f

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

(A) a

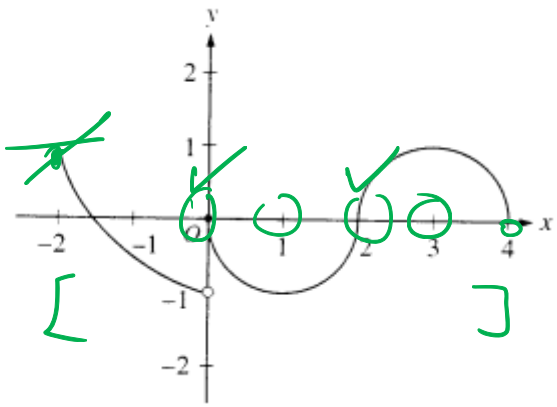
(B) b

(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?

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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 $\lim_{x \to 1} f(x)$ 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.
