Semester 1 - Unit 3 Review

AP Calc. AB/BC

Find the equation of any *vertical* tangent lines for the graph of $3y - y^3 = 5x - 2$

Let f and g be differentiable functions where $g(x) = f^{-1}(x)$ for all x. Let $f(-4) = -2$, $f(-1) = -4$, $f'(-4) = 5$, and $f'(-1) = 3$. What is the value of $g'(-4)$?

x	g(x)	g'(x)	h(x)	h'(x)
-1	1	-2	5	-2
1	4	2	-1	3
4	5	-3	1	2
5	-1	3	4	-3

Find $\frac{d}{dx} g^{-1}(4)$.

$$y = \tan^{-1}(3x)$$

$$y = \ln(x^3 - 2)$$

Find the slope of the tangent line at the given point.

$y = \arctan\left(\frac{x}{2}\right)$ at $x = 2\sqrt{3}$.

$$4 = 5x + y^2 \text{ at } (-1, 3)$$

$y = e^{3x}$ at $x = \frac{1}{3}$.

Find $f''(3)$.

Write an equation for the line tangent to the graph of $y = \frac{1}{f(x)}$ at $x = 1$.

Let g be the function defined by $g(x) = f(\sqrt{17 - 2x^2})$. Find $g'(2)$.

Let h be the inverse function of f. Find $h'(-2)$.
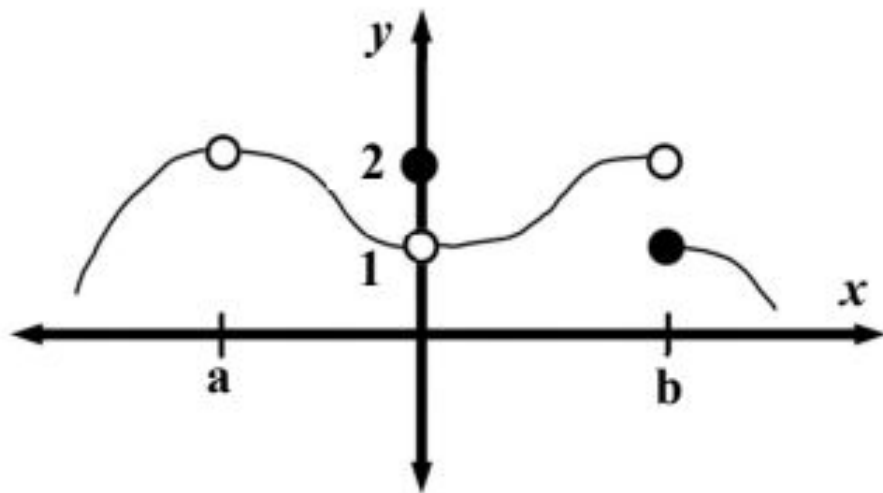
. The graph of the function f is shown in the figure above. Which of the following statements about f is true?

(A) $f(a)$ exists

(B) $\lim_{x \to a} f(x) = 2$

(C) $\lim_{x \to b} f(x) = 1$

(D) $\lim_{x \to b^-} f(x) = \lim_{x \to b^+} f(x)$

(E) f is continuous at $x = 0$

Answer Key:

[Semester 1 - Unit 3 Review - Answer Key](#)