Possible AP MC for Test

9. If $f(x) = \ln(x + 4 + e^{-3x})$, then $f'(0)$ is

A) A) $\frac{-2}{5}$ B) $\frac{2}{5}$ C) $\frac{1}{4}$ D) [redacted] E) nonexistent

1. If $y = \sin(3x)$, then $\frac{dy}{dx} =$

A) -3cos(3x) B) -cos(3x) C) $\frac{-1}{3}\cos 3x$ D) cos(3x) E) 3cos(3x)

15. If $f(x) = (\ln x)^2$ then, $f''(\sqrt{e}) =$

A) $\frac{1}{e}$ B) $\frac{2}{e}$ C) $\frac{1}{2\sqrt{e}}$ D) $\frac{1}{\sqrt{e}}$ E) $\frac{2}{\sqrt{e}}$

7. Let h be a differentiable function, and let f be the function defined by $f(x) = h(x^2 - 3)$. Which of the following is equal to $f'(2)$?

A) $h'(1)$ B) $4h'(1)$ C) $4h'(2)$ D) $h'(4)$ E) $4h'(4)$

x	f(x)	g(x)	$f'(x)$	$g'(x)$
-1	-5	1	3	0
0	-2	0	1	1
1	0	-3	0	.5
2	5	-1	5	2

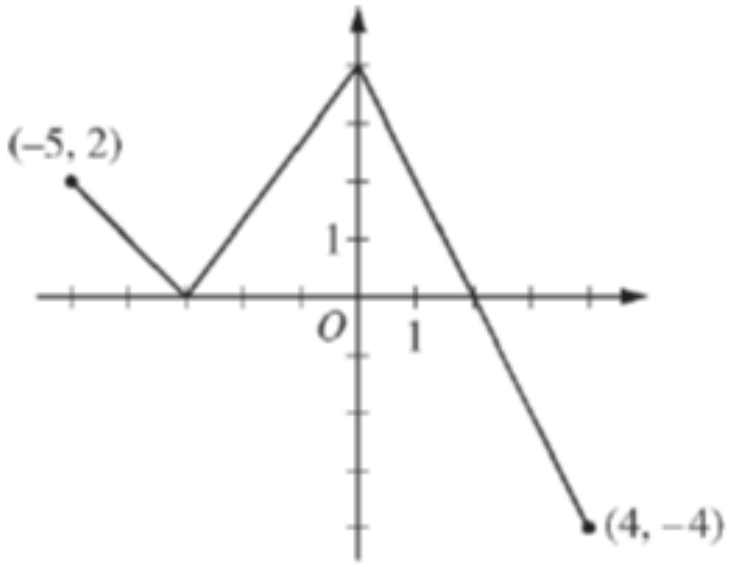
90. The table above gives the values of the differentiable functions f and g and of their derivatives f' and g′, at selected values of x. If h(x) = f(g(x)), what is the slope of the graph of h at x = 2?

A) -10 B) -6 C) 5 D) 6 E) 10

X	f(x)	$f'(x)$	g(x)	$g'(x)$
-1	6	5	3	-2
1	3	-3	-1	2
3	1	-2	2	3

79. The table above gives values of f(x), $f'(x)$, g(x), and $g'(x)$ at selected values of x. If h(x) = f(g(x)), then $h'(1) =$

A) 5 B) 6 C) 9 D) 10 E) 12

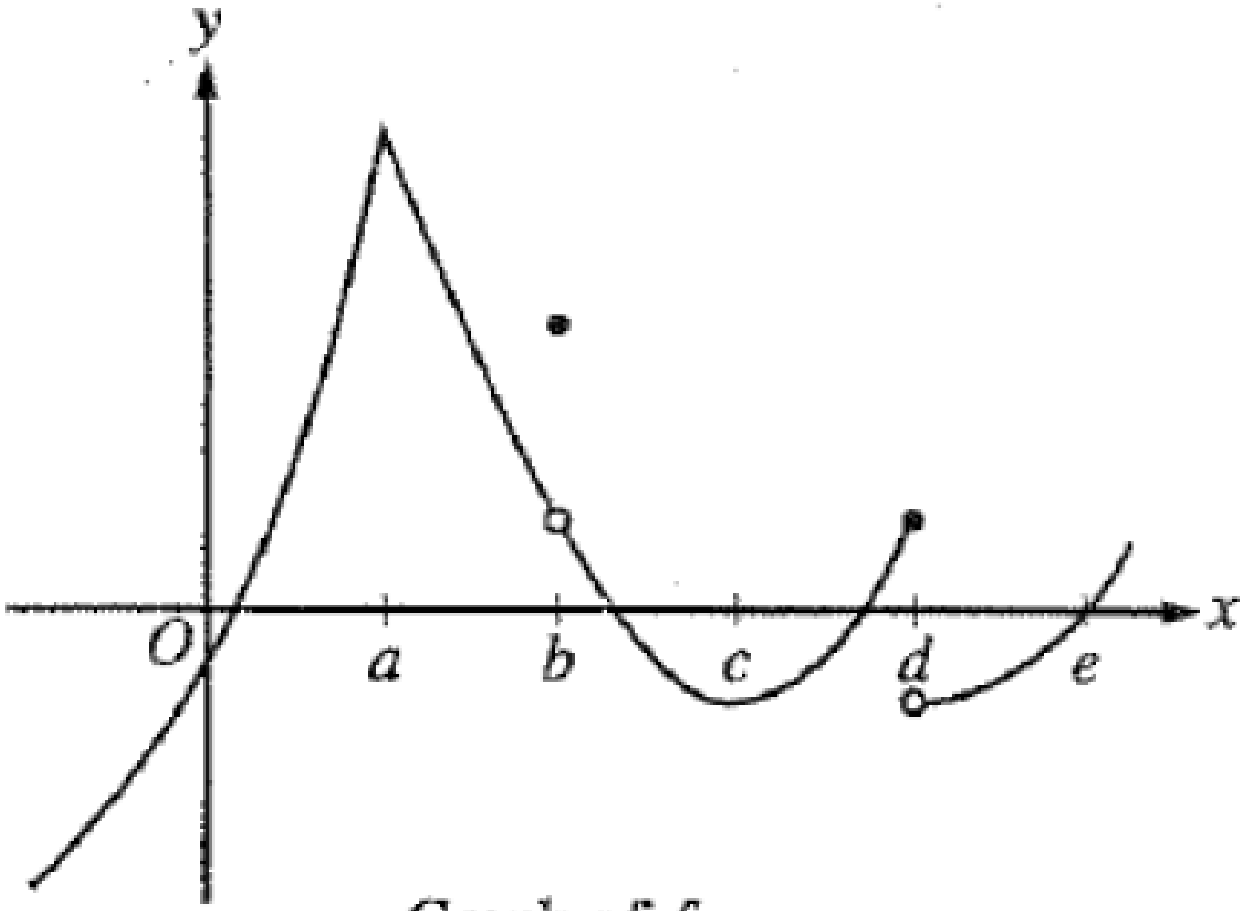


Graph of f

This is not a MC problem

3. The function f is defined on the closed interval [-5 , 4]. The graph of f consists of three line segments and is shown in the figure above.

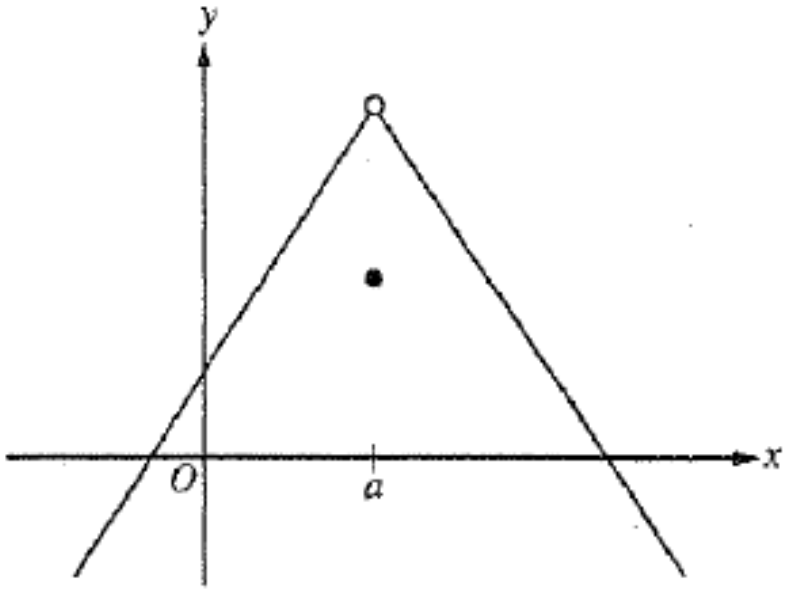
d) The function p is defined by $p(x) = f(x^2 - x)$. Find the slope of the line tangent to the graph of p at the point where $x = 2$.



Graph of f

13. 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



Graph of f

76. The graph of the function f is shown above. Which of the following statements must not be true.

A) f(a) exists
B) f(x) is defined for $0 < x < a$
C) f is not continuous at $x = a$
D) $\lim_{x \to a} f(x)$ exists
E) $\lim_{x \to a} f'(x)$ exists

Let f be a differentiable function such that $f(2) = 5$, $f(6) = -3$, $f'(2) = 7$ and $f'(6) = -9$. The function g is differentiable and $g(x) = f^{-1}(x)$ (x) for all x.

What is the value of $g'(-3)$?