1:	5:		9:			
2:	6:		10:			
3:	7:					
4:	8:	·				·

Let f be a differentiable function such that

$$f(3) = 15, f(6) = 3, f'(3) = -8, \text{ and } f'(6) = -2.$$

f(3) = 15, f(6) = 3, f'(3) = -8, and f'(6) = -2. The function g is differentiable and $g(x) = f^{-1}(x)$ for all x.

What is the value of g'(3)?

SHOW ANSWER

A.
$$\frac{-1}{2}$$

B.
$$\frac{-1}{8}$$

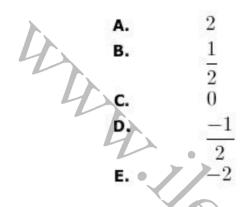
c.
$$\frac{1}{6}$$

D.
$$\frac{1}{3}$$

Cannot be determined. E.

The slope of the tangent to $y = \arctan(4x)$ at $x = \frac{1}{4}$ is:

SHOW ANSWER



Problem 3

If f'(x) = (x-1)(x+2)(3-x), which of the following is NOT true about f(x)?

- f(x) has a horizontal tangent at x=1A.
- f(x) is a polynomial of degree 4 В.
- f(x) has a relative maximum at x = 3C.
- D.
- f(x) is decreasing on (-2, 1) E.

At the point of intersection of $y = \sin(x + \frac{\pi}{2})$ and

 $y = 1 - \frac{x^2}{2}$, the tangent lines are:

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- identical
- parallel
- perpendicular
- ointersecting but not perpendicular
- none of the above

Problem 5

The graph of an even function passing through (3, -2) must also contain:

- (-3, -2)A.
- В.
- (3, 2)C.
- (2, 3)D.
- (0, 0)E.

$$\lim_{x \to 0} \frac{\cos(\frac{\pi}{2} + x) - \cos(\frac{\pi}{2} - x)}{x} =$$

SHOW ANSWER



Problem 7

$$\int 5^{2x} dx =$$

$$\frac{5^{2x}}{\ln 5}$$
 +

$$\frac{5^{2x}}{21-5} + C$$

$$\frac{5^{2x+1}}{2x+1} + C$$

$$\frac{5^{2x}}{2} + C$$

$$(\ln 5)5^{2x} + C$$

$$f(x) = \frac{25 - x^2}{5 - x}$$
 for $x \neq 5$

and f(x) = 5 when x = 5

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Which of the following is correct?

- **A.** f(x) is continuous at 5 since f(x) is defined at x = 5
- **B.** f(x) is continuous at 5 since $\lim_{x\to 5} f(x)$ exists
 - **c.** f(x) is discontinuous at 5 since f(5) does not exist
 - **D.** f(x) is discontinuous at 5 since $\lim_{x\to 5} f(x)$ DNE
 - **E.** f(x) is discontinuous at 5 since $\lim_{x\to 5} f(x) \neq f(5)$

Problem 9

If
$$y = \ln(2x+3)$$
, then $\frac{d^2y}{dx^2} =$

$$\frac{2}{2x+3}$$

c.
$$\frac{4}{(2x+3)^2}$$

D.
$$\frac{-4}{(2x+3)^2}$$

E.
$$\frac{-2}{(2x+3)^2}$$

$$\lim_{h \to 0} \frac{5^{2+h} - 25}{h} =$$

A.	0
В.	1
c.	25
D.	$25\ln 5$
F	$25e^{5}$
	200
°//	
Y	
	2
	* 5
	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
	1
	9x>
	`• 5
	, Cx
	A. B. C. D.

ANSWER KEY

1 (256)	A	5 (41)	A	9 (45)	D		
2 (254)	A	6 (42)	В	10 (46)	D		
3 (39)	Е	7 (43)	В				
4 (40)	A	8 (44)	Е				

