

Practice Test Derivatives

Name _____

For problems 1 - 8, find dy/dx . Make sure you simplify problem #2 and #3

$$1) y = \frac{1}{2}x^{10} - \frac{1}{6}x^6 + \frac{x}{3}$$

$$2) y = (4x - 2)(7 - 4x^5)$$

$$3) y = \frac{2x + 6}{8x - 1}$$

$$4) y = \frac{10}{x^5} + \frac{11}{x} + 5x$$

$$5) y = (x^6)(\cot(\sec x))$$

$$6) y = \frac{\tan(5x)}{3x}$$

$$7) y = \csc(\ln x) \sec(e^x)$$

$$8) y = (x^{\frac{4}{3}})(\cot(x))$$

Find the equation for the tangent to the curve at the given point.

$$9) f(x) = \frac{5}{x+4} \text{ at } x = -1$$

Solve the problem.

10) Find the equation of the normal line to the curve $y = 4x + 4x^2$ at the point $(-2, 8)$.

11) Find the points where the graph of the function has horizontal tangents.

$$f(x) = 6x^2 + 5x + 2$$

12) Find dy/dx if $y = 5\csc^7(2x^3)$ and then simplify the derivative

13) Find dy/dx if $y = \sqrt{2x + e^{x^4}}$

14) Find dy/dx if $y = \sin(2x)\tan(5x - 4)$

15) a. Find the derivative of $f(g(x))$

b. Use the table below and your answer to part a to find the derivative of $f(g(x))$ evaluated at $x=4$

x	$f(x)$	$g(x)$	$f'(x)$	$g'(x)$
3	1	4	6	7
4	3	3	2	-6

Find the derivative of the given function.

16) $y = 9 \arcsin(3x^5)$

17) $y = 10 \arccos(3t)$

18) $y = (x)(\arctan \sqrt{7x})$

Find dy/dx .

19) $y = (2x)(e^x) - 2e^x$

20) Find dy/dx if $y = 9^{\sin(6x)}$ (This is an exponential function with a base of 9)

21) Find dy/dx if $y = \frac{\ln(5x^3)}{x^4}$ and then simplify completely

22) Find dy/dx if $y = \ln(\ln(3x))$ and then simplify completely

23) Find dy/dx if $y = \log_5(2x - 5x^2)$ (This is a logarithmic function with a base of 5)