1. [–/2 Points] DETAILS SCALCET9 3.XP.4.024.

Find the derivative of the function.

$$F(x) = (7x^6 + 4x^3)^4$$

$F'(x) =$

Need Help? Watch It

2. [–/2 Points] DETAILS SCALCET9 3.4.009.

Find the derivative of the function.

$$f(x) = \sqrt{5x + 4}$$

$f'(x) =$

Need Help? Watch It

3. [–/1 Points] DETAILS SCALCET9 3.4.025.

Find the derivative of the function.

$$y = e^{\tan(\theta)}$$

$y' =$

4. [–/2 Points] DETAILS SCALCET9 3.XP.4.031.

Find the derivative of the function.

$$y = \cot^2(\sin(\theta))$$

$y' =$

Need Help? Watch It

5. [–/1 Points] DETAILS SCALCET9 3.4.059.

Find an equation of the tangent line to the curve at the given point.

$$y = \sin(\sin(x)), \quad (\pi, 0)$$

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6. [–/2 Points] DETAILS SCALCET9 3.4.069.

The differentiable functions f and g are defined for all real numbers x. Values of f, f', g, and g' for various values of x are given in the table.

x	$f(x)$	$f'(x)$	$g(x)$	$g'(x)$
1	3	4	2	6
2	1	5	8	7
3	7	7	2	9

(a) If $h(x) = f(g(x))$, find $h'(1)$.

$h'(1) =$ [ ]

(b) If $H(x) = g(f(x))$, find $H'(1)$.

$H'(1) =$ [ ]

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7. [–/1 Points] DETAILS SCALCET9 3.4.083.

Find the 50th derivative of $y = \cos(3x)$.

$f^{(50)}(x) =$

[ ]

[ ]

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8. [–/1 Points] DETAILS SCALCET9 3.4.085.

The displacement of a particle on a vibrating string is given by the equation $s(t) = 12 + \frac{1}{5}\sin(12\pi t)$ where s is measured in centimeters and t in seconds. Find the velocity (in cm/s) of the particle after t seconds.

$v(t) =$

cm/s

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9. [–/1 Points] DETAILS SCALCET9 3.XP.4.013.

Find the derivative of the function.

$$y = \cos(a^8 + x^8)$$

$y'(x) =$

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10. [–/1 Points] DETAILS SCALCET9 3.XP.4.050.

Find an equation of the tangent line to the curve at the given point.

$$y = (1 + 4x)^8, \quad (0, 1)$$

Need Help? Watch It

11. [–/2 Points] DETAILS SCALCET9 3.4.001.

Write the composite function in the form $f(g(x))$. [Identify the inner function $u = g(x)$ and the outer function $y = f(u)$.] (Use non-identity functions for $f(u)$ and $g(x)$.)

$$y = (4 - x^5)^3$$

$(f(u), g(x)) =$ ( )

Find the derivative $\frac{dy}{dx}$.

$\frac{dy}{dx} =$

12. [–/1 Points] DETAILS SCALCET9 3.4.007.

Find the derivative of the function.

$$f(x) = (2x^3 - 7x^2 + 8)^4$$

$f'(x) =$

13. [–/1 Points] DETAILS SCALCET9 3.4.014.

Find the derivative of the function.

$$g(\theta) = 8\cos^4(\theta)$$

$g'(\theta) =$