

2.4 A Chain Rule (2849184)

Question

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

1. Question Details

LarCalc9 2.4.001. [1196899]

Complete the table.

$y = f(g(x))$	$u = g(x)$	$y = f(u)$
$y = (7x - 3)^2$	$u =$ <input type="text" value="7x - 3"/>	$y =$ <input type="text" value="u^2"/>

2. Question Details

LarCalc9 2.4.008.MI. [1267194]

Find the derivative of the function.

$$y = 8(5 - x^2)^3$$

$$y'(x) = \text{$$

3. Question Details

LarCalc9 2.4.009. [2233587]

Find the derivative of the function.

$$g(x) = 4(5 - 9x)^5$$

$$g'(x) = \text{$$

4. Question Details

LarCalc9 2.4.010. [1197478]

Find the derivative of the function.

$$f(t) = (3t + 16)^{2/3}$$

$$f'(t) = \text{$$

5. Question Details

LarCalc9 2.4.011. [1196763]

Find the derivative of the function.

$$f(t) = \sqrt{5 - 3t}$$

$$f'(t) = \text{$$

6. Question Details

LarCalc9 2.4.014. [1197180]

Find the derivative of the function.

$$g(x) = \sqrt{x^2 - 6x + 9}$$

$$g'(x) = \begin{cases} 1, & x > \boxed{} \text{ } \text{🔑 3} \\ -1, & x < \boxed{} \text{ } \text{🔑 3} \end{cases}$$

7. Question Details

LarCalc9 2.4.017. [1196692]

Find the derivative of the function.

$$y = \frac{4}{x-2}$$

$$y'(x) = \boxed{-\frac{4}{(x-2)^2}}$$

8. Question Details

LarCalc9 2.4.020. [1047599]

Find the derivative of the function.

$$y = -\frac{7}{(t+6)^7}$$

$$y'(t) = \boxed{49(t+6)^{-8}}$$

9. Question Details

LarCalc9 2.4.021. [1196591]

Find the derivative of the function.

$$y = \frac{5}{\sqrt{x+9}}$$

$$y' = \boxed{-\frac{5}{2(x+9)^{\frac{3}{2}}}}$$

10. Question Details

LarCalc9 2.4.024. [1197122]

Find the derivative of the function.

$$f(x) = x(4x - 12)^3$$

$$f'(x) = \boxed{64(x-3)^2(4x-3)}$$

11. Question Details

LarCalc9 2.4.027. [1196643]

Find the derivative of the function.

$$y = \frac{6x}{\sqrt{x^2+6}}$$

$$y'(x) = \boxed{\frac{36}{\sqrt{(x^2+6)^3}}}$$

12. Question Details

LarCalc9 2.4.030.MI. [1385048]

Find the derivative of the function.

$$h(t) = \left(\frac{t^3}{t^6 + 9} \right)^2$$

 $h'(t) =$

$$2 \frac{t^3}{t^6 + 9} \left(\frac{(t^6 + 9)(3t^2) - 6t^8}{(t^6 + 9)^2} \right)$$

13. Question Details

LarCalc9 2.4.035. [1197084]

Find the derivative of the function.

$$f(x) = \sqrt{5 + \sqrt{1 + \sqrt{x}}}$$

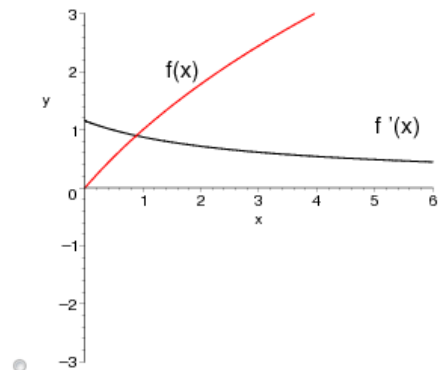
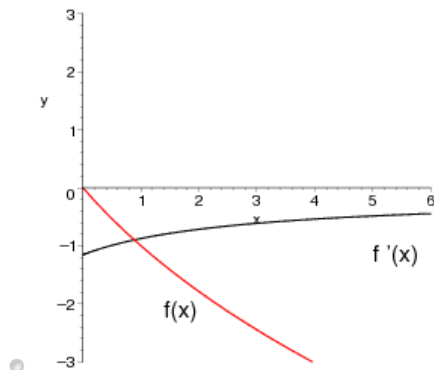
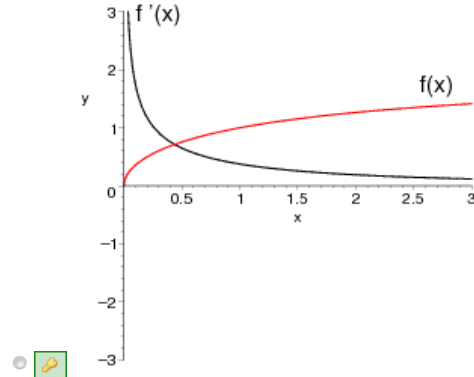
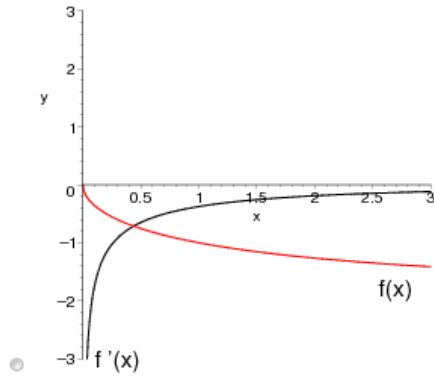
 $f'(x) =$

$$\frac{1}{8\sqrt{x}\sqrt{1 + \sqrt{x}}\sqrt{5 + \sqrt{1 + \sqrt{x}}}}$$

Consider the following.

$$f(x) = \sqrt{\frac{4x}{x+3}}$$

Use a computer algebra system to find the derivative of the function. Then use the utility to graph the function and its derivative on the same set of coordinate axes.



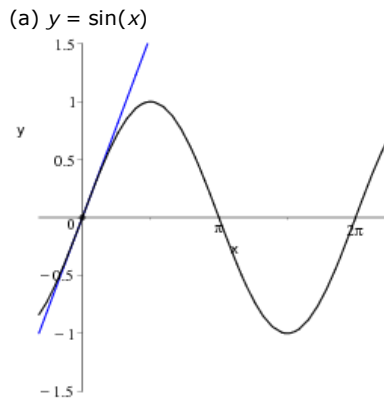
Describe the behavior of the function when the derivative is zero.

- f approaches $\sqrt{2}$ when f' is zero.
- f' is never zero.
- f approaches $-\sqrt{2}$ when f' is zero.
- f approaches ∞ when f' is zero.

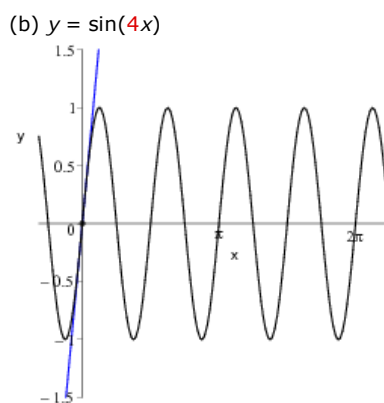
15. Question Details

LarCalc9 2.4.043. [1197501]

Find the slope of the tangent line to the sine function at the origin.



$$y'(0) = \text{[input box]} \quad \text{[key icon]} \quad 1$$



$$y'(0) = \text{[input box]} \quad \text{[key icon]} \quad 4$$

Compare these values with the number of complete cycles in the interval $[0, 2\pi]$. What can you conclude about the slope of the sine function $\sin(ax)$ at the origin?

The slope of $\sin(ax)$ at the origin is

a

16. Question Details

LarCalc9 2.4.045. [1197678]

Find the derivative of the function.

$$y = \cos(8x)$$

$$y' = \text{[input box]} \quad \text{[key icon]} \quad -8 \sin(8x)$$

Assignment Details

Name (AID): **2.4 A Chain Rule (2849184)**Submissions Allowed: **5**Category: **Homework**

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