

## 2.3B Product and Quotient Rules (2846413)

Question

[1](#) [2](#) [3](#) [4](#) [5](#) [6](#) [7](#) [8](#) [9](#) [10](#) [11](#) [12](#) [13](#) [14](#) [15](#) [16](#) [17](#) [18](#) [19](#) [20](#) [21](#) [22](#) [23](#) [24](#) [25](#) [26](#)

1. Question Details

LarCalc9 2.3.029. [1197547]

Find the derivative of the algebraic function.

$$f(x) = \frac{x - 11}{\sqrt{x}}$$

 $f'(x) =$ 

2. Question Details

LarCalc9 2.3.031. [1196695]

Find the derivative of the algebraic function.

$$h(s) = (s^5 - 1)^2$$

 $h'(s) =$ 

3. Question Details

LarCalc9 2.3.038. [1889312]

Find the derivative of the algebraic function.

$$f(x) = \frac{c^4 - x^4}{c^4 + x^4}, \text{ c is a constant.}$$

 $f'(x) =$ 

4. Question Details

LarCalc9 2.3.039. [1196568]

Find the derivative of the trigonometric function.

$$f(t) = t^3 \sin(t)$$

 $f'(t) =$ 

5. Question Details

LarCalc9 2.3.041. [1196659]

Find the derivative of the trigonometric function.

$$f(t) = \frac{\sin(t)}{t}$$

 $f'(t) =$

6. Question Details

LarCalc9 2.3.046. [1048949]

Find the derivative of the trigonometric function.

$$h(x) = \frac{3}{x} - 8 \sec(x)$$

 $h'(x) =$ 

7. Question Details

LarCalc9 2.3.049. [1197085]

Find the derivative of the trigonometric function.

$$y = -\csc(x) - \cos(x)$$

 $y' =$ 

8. Question Details

LarCalc9 2.3.053. [1197012]

Find the derivative of the trigonometric function.

$$y = 4x \sin(x) + x^6 \cos(x)$$

 $y' =$ 

9. Question Details

LarCalc9 2.3.059. [1054340]

Evaluate the derivative of the function at the given point. Use a graphing utility to verify your result.

$$y = \frac{4 + \csc(x)}{8 - \csc(x)}, \left( \frac{\pi}{6}, 1 \right)$$

 $y' =$

10. Question Details

LarCalc9 2.3.067. [1197146]

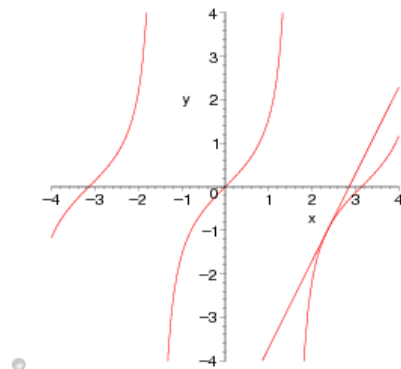
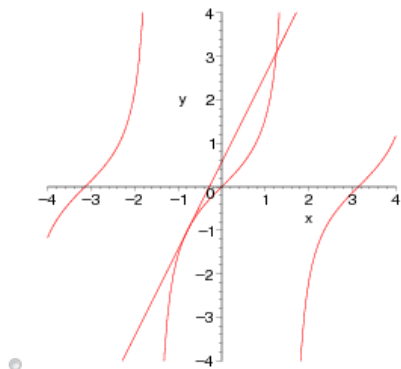
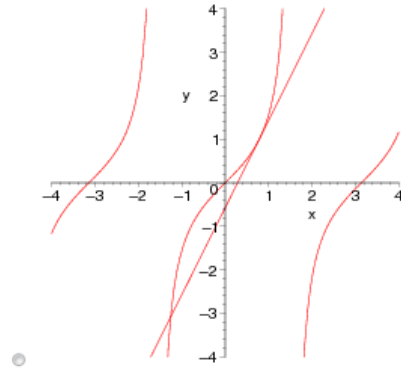
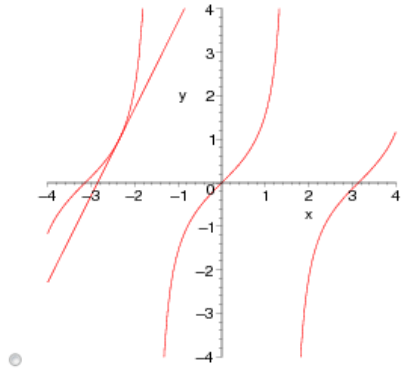
Consider the following.

$$f(x) = \tan(x), \quad \left(\frac{\pi}{4}, 1\right)$$

(a) Find an equation of the tangent line to the graph of  $f$  at the given point.

$y =$

(b) Use a graphing utility to graph the function and its tangent line at the point.



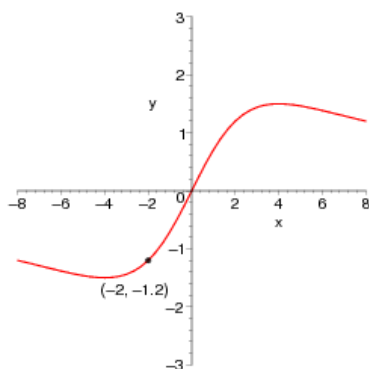
11. Question Details

LarCalc9 2.3.071. [1197689]

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

$$f(x) = \frac{12x}{x^2 + 16}, \quad (-2, -1.2)$$

$y =$



12. Question Details

LarCalc9 2.3.074. [1047630]

Determine the point at which the graph of the function has a horizontal tangent line.

$$f(x) = \frac{7x^2}{x^2 + 4}$$

$$(x, y) = ( \text{ } )$$

13. Question Details

LarCalc9 2.3.075. [1048994]

Find the point(s), if any, at which the graph of  $f$  has a horizontal tangent.

$$f(x) = \frac{x^2}{x - 4}$$

$$(x, y) = ( \text{ } ) \text{ (smaller } x\text{-value)}$$

$$(x, y) = ( \text{ } ) \text{ (larger } x\text{-value)}$$

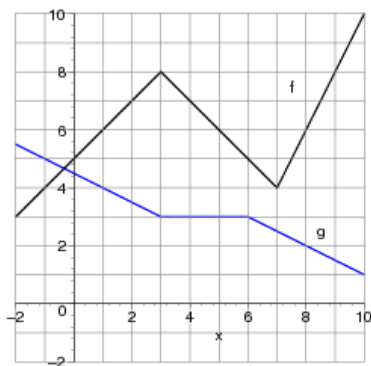
14. Question Details

LarCalc9 2.3.081. [1048963]

Use the graph of  $f$  and  $g$ .

$$p(x) = f(x)g(x)$$

$$q(x) = \frac{f(x)}{g(x)}$$



(a) Find  $p'(2)$ .

$$p'(2) = \text{ }$$

(b) Find  $q'(4)$ .

$$q'(4) = \text{ }$$

15. Question Details

LarCalc9 2.3.083. [1197196]

The length of a rectangle is given by  $9t + 9$  and its height is  $\sqrt{t}$ , where  $t$  is time in seconds and the dimensions are in centimeters. Find the rate of change of the area with respect to time.

$$A'(t) =$$

16. Question Details

LarCalc9 2.3.084. [1048989]

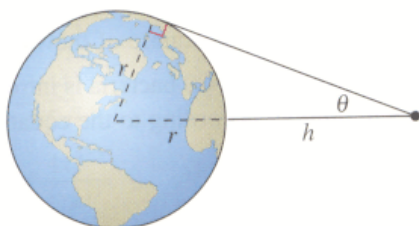
The radius of a right circular cylinder is given by  $\sqrt{t+9}$  and its height is  $\frac{1}{9}\sqrt{t}$ , where  $t$  is time in seconds and the dimensions are in inches. Find the rate of change of the volume with respect to time.

in<sup>3</sup>/s

17. Question Details

LarCalc9 2.3.092. [1054338]

When satellites observe the Earth, they can scan only part of the Earth's surface. Some satellites have sensors that can measure the angle  $\theta$  shown in the figure. Let  $h$  represent the satellite's distance from the Earth's surface and let  $r$  represent Earth's radius.



$$h = r(\csc(\theta) - 1)$$

Find the rate at which  $h$  is changing with respect to  $\theta$  when  $\theta = 75^\circ$ . (Assume  $r = 3960$  miles. Round your answer to the nearest mile/radian.)

mi/rad

18. Question Details

LarCalc9 2.3.093.MI. [1267214]

Find the second derivative of the function.

$$f(x) = x^4 + 8x^3 - 9x^2 - 2x$$

$f''(x) =$

19. Question Details

LarCalc9 2.3.095. [1047703]

Find the second derivative of the function.

$$f(x) = x^{3/2}$$

$f''(x) =$

20. Question Details

LarCalc9 2.3.097. [1047636]

Find the second derivative of the function.

$$f(x) = \frac{x}{x-7}$$

$f''(x) =$

21. Question Details

LarCalc9 2.3.099. [1197241]

Find the second derivative of the function.

$$f(x) = x \sin(x)$$

$$f''(x) =$$

22. Question Details

LarCalc9 2.3.105. [1048007]

Use the given information to find  $f'(7)$ .

$$f(x) = 8g(x) + h(x)$$

$$g(7) = 2 \text{ and } g'(7) = 6$$

$$h(7) = -8 \text{ and } h'(7) = 1$$

$$f'(7) = \boxed{\phantom{000}}$$

23. Question Details

LarCalc9 2.3.107. [1246975]

Use the given information to find  $f'(2)$ .

$$g(2) = 3 \text{ and } g'(2) = -4$$

$$h(2) = -1 \text{ and } h'(2) = 4$$

$$f(x) = \frac{g(x)}{h(x)}$$

$$f'(2) = \boxed{\phantom{000}}$$

24. Question Details

LarCalc9 2.3.108. [1048022]

Use the given information to find  $f'(3)$ .

$$f(x) = g(x)h(x)$$

$$g(3) = -2 \text{ and } g'(3) = -9$$

$$h(3) = 7 \text{ and } h'(3) = -7$$

$$f'(3) = \boxed{\phantom{000}}$$

25. Question Details

LarCalc9 2.3.117. [1048006]

The velocity of an object in meters per second is  $v(t) = 49 - t^2$ ,  $0 \leq t \leq 6$ . Find the velocity  $v(2)$  and acceleration  $a(2)$  of the object when  $t = 2$ .

$$v(2) = \boxed{\phantom{000}}$$

$$a(2) = \boxed{\phantom{000}}$$

What can be said about the speed of the object when the velocity and acceleration have opposite signs?

The speed of the object is ---Select--- , but the rate of that ---Select--- is ---Select--- .

26. Question Details

LarCalc9 2.3.118. [1048019]

An automobile's velocity starting from rest is given by the equation below, where  $v$  is measured in feet per second. (Round your answers to three decimal places.)

$$v(t) = \frac{90t}{3t + 15}$$

(a) Find the acceleration at 5 seconds.

 ft/sec<sup>2</sup>

(b) Find the acceleration at 10 seconds.

 ft/sec<sup>2</sup>

(c) Find the acceleration at 20 seconds.

 ft/sec<sup>2</sup>

## Assignment Details

Name (AID): **2.3B Product and Quotient Rules (2846413)**Submissions Allowed: **5**Category: **Homework**

Code:

Locked: **Yes**Author: **Goldsworthy, William** ( [bgoldsworthy@soroschool.org](mailto:bgoldsworthy@soroschool.org) )Last Saved: **Sep 25, 2012 01:02 PM EDT**Permission: **Protected**Randomization: **Person**Which graded: **Last****Feedback Settings**

Before due date

Question Score

Assignment Score

Publish Essay Scores

Question Part Score

Mark

Add Practice Button

Help/Hints

Response

Save Work

After due date

Question Score

Assignment Score

Publish Essay Scores

Key

Question Part Score

Solution

Mark

Add Practice Button

Help/Hints

Response