Score: 10 of 10 pts | 1 of 21 | **Test Score:** 94.68%, 222.5 of 2

3.1.7

Question Help

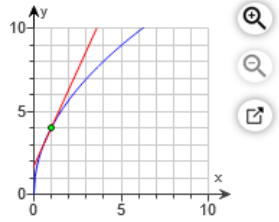
Find an equation for the tangent to the curve at the given point. Then sketch the curve and the tangent together.

$y = 4\sqrt{x}$, (1,4)

$y =$ $2x + 2$

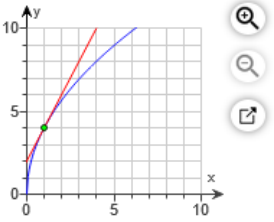
Choose the correct graph of the curve and the tangent below.

A.



B.

C.



Score: 10 of 10 pts | 2 of 21 | **Test Sc**

3.1.11

Find the slope of the function's graph at the given point. Then find an equation for the line tangent to the graph there.

$f(x) = x^2 + 6$, $(-2, 10)$

What is the slope of the function's graph at the given point?

$m =$ -4 (Simplify your answer.)

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

$y =$ $-4x + 2$

Score: 10 of 10 pts | 3 of 21 | **Test Score:** 94.68%, 222.5 of 235 pts

3.1.29

Question Help

An object is dropped from the top of a cliff 650 meters high. Its height above the ground t seconds after it is dropped is $650 - 4.9t^2$. Determine its speed 10 seconds after it is dropped.

The speed of the object 10 seconds after it is dropped is 98 m/sec.
(Simplify your answer.)

Score: 7.5 of 10 pts | 4 of 21 | **Test Scor**

3.2.1

Using the definition, calculate the derivative of the function. Then find the values of the derivative as specified.

$f(x) = 3 - x^2$; $f'(-8)$, $f'(0)$, $f'(5)$

$f'(x) = -2x$

$f'(-8) = 16$

$f'(0) = 0$

$f'(5) = -10$

You answered: -30

Get answer feedback

Score: 10 of 10 pts | 5 of 21

3.2.7

Find the indicated derivative.

$\frac{dy}{dx}$ if $y = 4x^3$

$\frac{dy}{dx} = 12x^2$

Score: 10 of 10 pts | 6 of 21

3.2.15

Differentiate the function and find the slope of the tangent line at the given value of the independent variable.

$s = 7t^3 - 2t^2, \quad t = -9$

$s'(t) = 21t^2 - 4t$

The slope of the tangent line is 1737 at $t = -9$.

Score: 10 of 10 pts 7 of 21

3.2.19

Find the value of the derivative.

$\left.\frac{dy}{dx}\right|_{x=-4}$ if $y = 9 - 8x^2$

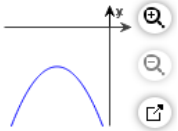
If $y = 9 - 8x^2$, $\left.\frac{dy}{dx}\right|_{x=-4} = 64$. (Simplify your answer.)

Score: 10 of 10 pts 8 of 21 **Test Score:** 94.68%, 222.5 of 235 p

3.2.27

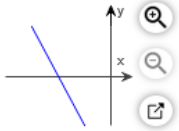
Question Help

Graph the derivative of the function graphed on the right.

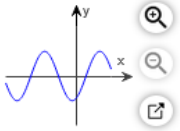


Choose the correct graph below.

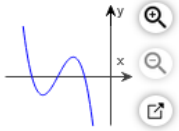
A.



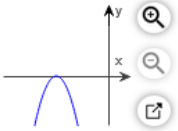
B.



C.



D.

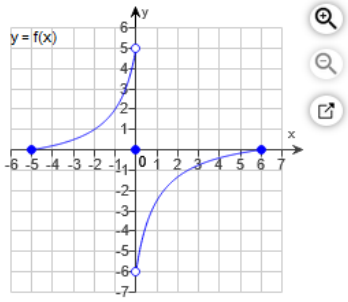


Score: 10 of 10 pts | 9 of 21 | **Test Score:** 94.68%, 222.5 of 235 pts

3.2.45

Question Help

The figure below shows the graph of a function over the closed interval $-5 \le x \le 6$. Complete parts (a) through (c) to the right.



a. At what domain points does the function appear to be differentiable?

- A. $-5 \le x < 0,\ 0 < x \le 6$
- B. $x = 0$
- C. $-5 \le x \le 6$
- D. None

b. At what domain points does the function appear to be continuous but not differentiable?

- A. $-5 \le x \le 6$
- B. $-5 \le x < 0,\ 0 < x \le 6$
- C. $x = 0$
- D. None

c. At what domain points does the function appear to be neither continuous nor differentiable?

- A. $x = 0$
- B. $-5 \le x < 0,\ 0 < x \le 6$
- C. $-5 \le x \le 6$
- D. None

Score: 20 of 20 pts | 10 of 21

3.3.3

Find the first and second derivatives.

$$s = 6t^5 - 5t^6$$

$$\frac{ds}{dt} = 30t^4 - 30t^5$$

$$\frac{d^2s}{dt^2} = 120t^3 - 150t^4$$

Score: 20 of 20 pts

11 of 21

3.3.9

Find the first and second derivatives.

$$y = 5x^2 - 13x - 4x^{-4}$$

$$\frac{dy}{dx} = 10x - 13 + 16x^{-5}$$

$$\frac{d^2y}{dx^2} = 10 - 80x^{-6}$$

Score: 10 of 10 pts

12 of 21

3.3.17

Find the derivative of the function.

$$y = \frac{8x - 1}{4x + 3}$$

The derivative is $y' = \frac{28}{(4x+3)^2}$.

Score: 10 of 10 pts

13 of 21

3.3.22

Find the derivative of the function.

$$y = (4t - 1)(6t - 3)^{-1}$$

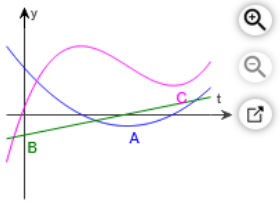
$$\frac{dy}{dt} = -\frac{6}{(6t-3)^2}$$

Score: 10 of 10 pts | 14 of 21 | **Test Score:** 94.68%, 222.5 of 235 pt

3.4.21

Question Help

The graphs in the accompanying figure show the position s, velocity $v = \frac{ds}{dt}$, and acceleration $a = \frac{d^2s}{dt^2}$ of a body moving along a coordinate line as functions of time t. Which graph is which?



Choose the correct answer below.

- A. The graph labeled B is the graph of the position s, the graph labeled A is the graph of the velocity v, and the graph labeled C is the graph of the acceleration a.
- B. The graph labeled C is the graph of the position s, the graph labeled A is the graph of the velocity v, and the graph labeled B is the graph of the acceleration a.
- C. The graph labeled A is the graph of the position s, the graph labeled C is the graph of the velocity v, and the graph labeled B is the graph of the acceleration a.
- D. The graph labeled C is the graph of the position s, the graph labeled B is the graph of the velocity v, and the graph labeled A is the graph of the acceleration a.

Score: 15 of 15 pts | 15 of 21 | **Test Score:** 94.68%, 222.5 of 235 pts

3.4.23

Question Help

Suppose that the dollar cost of producing x appliances is $c(x) = 500 + 90x - 0.2x^2$.
a. Find the average cost per appliance of producing the first 130 appliances.
b. Find the marginal cost when 130 appliances are produced.
c. Show that the marginal cost when 130 appliances are produced is approximately the cost of producing one more appliance after the first 130 have been made, by calculating the latter cost directly.

The average cost per appliance of producing the first 130 appliances is $ 67.85 / appliance.
(Round to the nearest cent as needed.)

The marginal cost when 130 appliances are produced is $ 38 .
(Round to the nearest cent as needed.)

The cost of producing one more appliance beyond 130 appliances is $ 37.8 .
(Round to the nearest cent as needed.)

Score: 10 of 10 pts | 16 of 21

3.5.1

Find $\frac{dy}{dx}$ for $y = -20x + 3\cos x$.

$\frac{d}{dx}(-20x + 3\cos x) = -20 - 3\sin x$

Score: 10 of 10 pts

17 of 21

3.5.7

Find $\frac{dy}{dx}$ for the following function.

$y = 4 \cos x \tan x$

Choose the correct answer below.

A. $\frac{dy}{dx} = \sin x \tan x + 4 \sec x$

B. $\frac{dy}{dx} = 4 \cos x$

C. $\frac{dy}{dx} = -5 \sin x \tan x + 5 \sec x$

D. $\frac{dy}{dx} = -4 \sin x \tan x - \sec x$

Score: 0 of 10 pts

18 of 21

3.5.15

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

$y = 6(\cos x + \sin x)(\cos x - \sin x)$

$\frac{dy}{dx} = -24 \sin x \cos x$

You answered: 0

Get answer feedback

Score: 10 of 10 pts 19 of 21

3.5.19

Find $\frac{ds}{dt}$ for $s = \cot t + t$.

$\frac{ds}{dt} = -\cot^2 t$

Score: 10 of 10 pts 20 of 21

3.5.23

Find $\frac{dr}{d\theta}$.

$r = 3 - \theta^2 \sin\theta$

$\frac{dr}{d\theta} = -\theta^2 \cos\theta - 2\theta \sin\theta$

You answered: $-\theta^2 \cos x - 2\theta \sin\theta$

Get answer feedback

Score: 10 of 10 pts 21 of 21

3.5.47

Find the limit.

$$\lim_{x \to 5} \cos\left(-\frac{9\pi}{x} - \frac{\pi}{5}\right)$$

$\lim_{x \to 5} \cos\left(-\frac{9\pi}{x} - \frac{\pi}{5}\right) = 1$ (Simplify your answer.)