Score: 0.5 of 1 pt | 1 of 42 | **Test Score:** 81.59%, 34.27 of 42

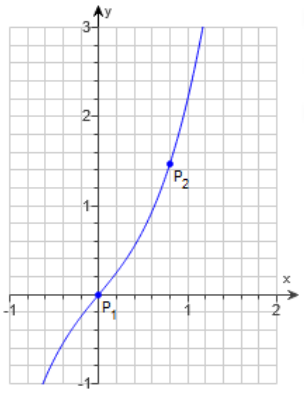
3.1.1

Question Help

Use the grid to make a rough estimate of the slope of the curve (in y-units per x-unit) at the points P_1 and P_2.

The slope at P_1 is approximately 1.

The slope at P_2 is approximately 3.

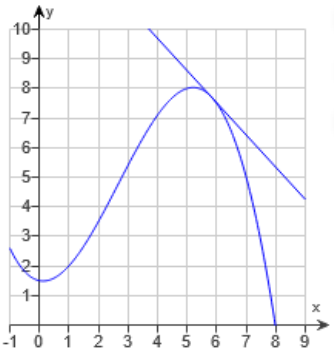


Score: 0 of 1 pt | 2 of 42 | **Test Score:** 81.59%, 3

3.1.3

Questi

Estimate the slope (in y-units per x-unit) of the tangent line to the curve.



What is your estimate of the slope?

slope ≈ −1 (Round to the nearest integer.)

Score: 1 of 1 pt | 3 of 42 | **Test Score:** 81.59%, 34.27 of

3.1.7

Question Help

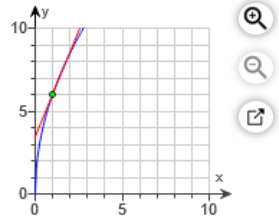
Find an equation for the tangent to the curve at the given point. Then sketch the curve and the tangent together.

$y = 6\sqrt{x}$, (1,6)

$y =$ $3x + 3$

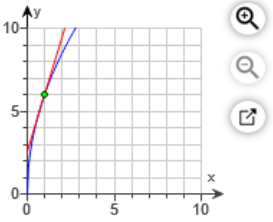
Choose the correct graph of the curve and the tangent below.

A.



B.

C.



Score: 1 of 1 pt | 4 of 42

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.

$f(x) = x^2 - 4$, (4,12)

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

$m =$ 8 (Simplify your answer.)

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

$y =$ $8x - 20$

Score: 1 of 1 pt | 5 of 42

3.1.19

Find the slope of the curve $y = 2x^2$ at (6,72).

The slope of the curve $y = 2x^2$ at (6,72) is 24. (Simplify your answer.)

Score: 1 of 1 pt | 6 of 42 | **Test Score:** 81.59%, 34.27 of 42 p

3.1.29 | Question Help

An object is dropped from the top of a cliff 600 meters high. Its height above the ground t seconds after it is dropped is $600-4.9t^2$. Determine its speed 4 seconds after it is dropped.

The speed of the object 4 seconds after it is dropped is 39.2 m/sec.
(Simplify your answer.)

Score: 0.5 of 1 pt | 7 of 42

3.2.1

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

$f(x)=6-x^2$; $f'(-2)$, $f'(0)$, $f'(6)$

$f'(x)=-2x$

$f'(-2)=4$

$f'(0)=0$

$f'(6)=-12$

Score: 0.5 of 1 pt | 7 of 42 | **Test Score:** 81.59%, 34.27 of 42 pts

3.2.1 | Question Help

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

$f(x)=6-x^2$; $f'(-2)$, $f'(0)$, $f'(6)$

$f'(x)=-2x$

$f'(-2)$

You answered: -2

Get answer feedback

$f'(0)=$

$f'(6)=-12$

Score: 0.5 of 1 pt | 7 of 42 | **Test**

3.2.1

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

$f(x)=6-x^2$; $f'(-2)$, $f'(0)$, $f'(6)$

$f'(x)=-2x$

$f'(-2)=4$

$f'(0)=0$

You answered: 2

Get answer feedback

$f'(6)=$

Score: 1 of 1 pt

8 of 42

3.2.5

Use the definition to calculate the derivative of the following function. Then find the values of the derivative as specified.

$p(\theta) = \sqrt{5\theta}; \quad p'(1), \quad p'(5), \quad p'\left(\frac{3}{5}\right)$

$p'(\theta) = \frac{\sqrt{5}}{2\sqrt{\theta}}$

$p'(1) = \frac{\sqrt{5}}{2}$

$p'(5) = \frac{1}{2}$

$p'\left(\frac{3}{5}\right) = \frac{5}{2\sqrt{3}}$

Score: 1 of 1 pt

9 of 42

3.2.7

Find the indicated derivative.

$\frac{dy}{dx}$ if $y = 7x^3$

$\frac{dy}{dx} = 21x^2$

Score: 1 of 1 pt

10 of 42

3.2.13

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

$f(x) = 4x + \frac{3}{x}, \quad x = -1$

The derivative of the function $f(x) = 4x + \frac{3}{x}$ is $4 - \frac{3}{x^2}$.

The slope of the tangent line at $x = -1$ is 1.

Score: 1 of 1 pt 11 of 42

3.2.15

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

$s = t^3 - 8t^2, \quad t = -7$

$s'(t) =$ $3t^2 - 16t$

The slope of the tangent line is 259 at $t = -7$.

Score: 1 of 1 pt 12 of 42

3.2.19

Find the value of the derivative.

$\left.\frac{dy}{dx}\right|_{x=-5}$ if $y = 7 - 3x^2$

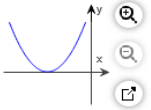
If $y = 7 - 3x^2$, $\left.\frac{dy}{dx}\right|_{x=-5} =$ 30 . (Simplify your answer.)

Score: 1 of 1 pt 13 of 42 **Test Score:** 81.59%, 34.27 of 42 pts

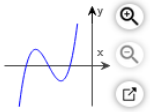
3.2.27

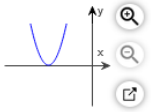
Question Help

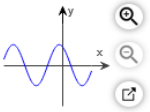
Graph the derivative of the function graphed on the right.

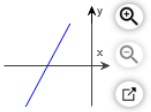


Choose the correct graph below.

A. 

B. 

C. 

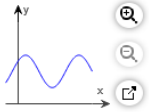
D. 

Score: 1 of 1 pt 14 of 42 **Test Score:** 81.59%, 34.27 of 42 pts

3.2.29

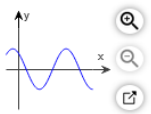
Question Help

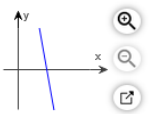
Graph the derivative of the function graphed on the right.

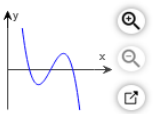


Choose the correct graph below.

A. 

B. 

C. 

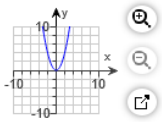
D. 

Score: 1 of 1 pt | 15 of 42 | **Test Score:** 81.59%, 34.27

3.2.30

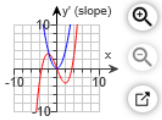
Question He

Match the graph of the function on the right with the graph of its derivative.

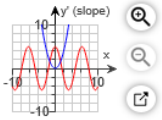


Choose the correct graph of the function (in blue) and its derivative (in red) below.

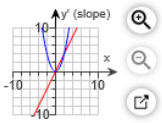
A.



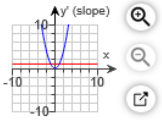
B.



C.



D.

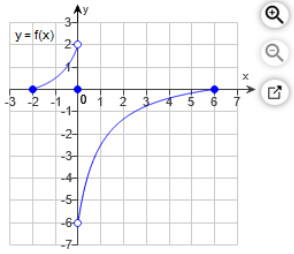


Score: 1 of 1 pt | 16 of 42 | **Test Score:** 81.59%, 34.27 of 42 pts

3.2.45

Question Help

The figure below shows the graph of a function over the closed interval $-2 \le x \le 6$. Complete parts (a) through (c) to the right.



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

- A. $-2 \le x < 0,\ 0 < x \le 6$
- B. $-2 \le x \le 6$
- C. $x = 0$
- D. None

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

- A. $-2 \le x < 0,\ 0 < x \le 6$
- B. $-2 \le x \le 6$
- C. $x = 0$
- D. None

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

- A. $-2 \le x < 0,\ 0 < x \le 6$
- B. $-2 \le x \le 6$
- C. $x = 0$
- D. None

Score: 1 of 1 pt | 17 of 42

3.3.1

Find the first and second derivatives.

$y = -2x^8 - 5$

$\frac{dy}{dx} = -16x^7$

$\frac{d^2y}{dx^2} = -112x^6$

Score: 1 of 1 pt

3.3.3

Find the first and second derivatives.

$s = 8t^3 - 3t^8$

$\frac{ds}{dt} = 24t^2 - 24t^7$

$\frac{d^2s}{dt^2} = 48t - 168t^6$

Score: 1 of 1 pt

3.3.7

Find the first and second derivatives.

$y = 4x^{-7} - \frac{8}{x}$

$\frac{dy}{dx} = -\frac{28}{x^8} + \frac{8}{x^2}$

$\frac{d^2y}{dx^2} = \frac{224}{x^9} - \frac{16}{x^3}$

Score: 1 of 1 pt

3.3.9

Find the first and second derivatives.

$y = 5x^2 - 12x - 6x^{-4}$

$\frac{dy}{dx} = 10x - 12 + 24x^{-5}$

$\frac{d^2y}{dx^2} = 10 - 120x^{-6}$

Score: 0 of 1 pt

21 of 42

3.3.11

Find the first and second derivatives.

$$r = \frac{1}{2s} - \frac{5}{3s^2}$$

$$\frac{dr}{ds} = -\frac{1}{2s^2} + \frac{10}{3s^3}$$

$$\frac{d^2r}{ds^2} = \frac{1}{s^3} - \frac{10}{s^4}$$

Score: 0 of 1 pt

21 of 42

3.3.11

Find the first and second derivatives.

$$r = \frac{1}{2s} - \frac{5}{3s^2}$$

$$\frac{dr}{ds} = -\frac{1}{2s^2} + \frac{10}{3s^3}$$

$$\frac{d^2r}{ds^2} =$$

You answered: $-\frac{1}{2s^2} - \frac{10}{3s^3}$

Get answer feedback

Score: 0 of 1 pt

21 of 42

3.3.11

Find the first and second derivatives.

$$r = \frac{1}{2s} - \frac{5}{3s^2}$$

$$\frac{dr}{ds} = -\frac{1}{2s^2} + \frac{10}{3s^3}$$

$$\frac{d^2r}{ds^2} = \frac{1}{s^3} - \frac{10}{s^4}$$

You answered: $\frac{1}{x^3} + \frac{10}{s^4}$

Get answer feedback

Score: 1 of 1 pt

22 of 42

3.3.13

Find y′ by **(a)** applying the product rule and **(b)** multiplying the factors to produce a sum of simpler terms to differentiate.

$y = (5 - x^2)(x^3 - 2x + 4)$

(a) Find y′ by applying the product rule. Fully expand your answer.

$y' = -5x^4 + 21x^2 - 8x - 10$

(b) Find y′ by multiplying the factors to produce a sum of simpler terms to differentiate.

$y' = -5x^4 + 21x^2 - 8x - 10$

Score: 0 of 1 pt

23 of 42

3.3.17

Find the derivative of the function.

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

The derivative is $y' = \dfrac{19}{(3x+4)^2}$.

You answered: $-\dfrac{19}{(3x+4)^2}$

Get answer feedback

Score: 1 of 1 pt

24 of 42

3.3.19

Find the derivative of the function.

$y = \dfrac{9x^2 + 1}{x^2 + 5}$

$y' = \dfrac{88x}{(x^2+5)^2}$

Score: 1 of 1 pt

25 of 42

3.3.22

Find the derivative of the function.

$$y = (4t - 1)(3t - 5)^{-1}$$

$$\frac{dy}{dt} = -\frac{17}{(3t-5)^2}$$

Score: 0 of 1 pt

26 of 42

3.3.33

Find the first and second derivatives.

$$y = \frac{x^3 + 9}{x}$$

$$y' = 2x - \frac{9}{x^2}$$

$y'' =$

You answered: $3x - \frac{9}{x^2}$ Close

Get answer feedback

Score: 0 of 1 pt

26 of 42

3.3.33

Find the first and second derivatives.

$$y = \frac{x^3 + 9}{x}$$

$$y' = 2x - \frac{9}{x^2}$$

$$y'' = 2 + \frac{18}{x^3}$$

You answered: $3 + \frac{18}{x^3}$

Get answer feedback

Score: 1 of 1 pt | 27 of 42 | **Test Score:** 81.59%, 34.27 of 42 p

3.3.60 | Question Help

The reaction of the body to a dose of medicine can sometimes be represented by an equation of the form $R = M^2\left(\frac{C}{2} - \frac{M}{3}\right)$, where C is a positive constant and M is the amount of medicine absorbed in the blood. If the reaction is a change in blood pressure, R is measured in millimeters of mercury. If the reaction is a change in temperature, R is measured in degrees, and so on. Find $\frac{dR}{dM}$. This derivative, as a function of M, is called the sensitivity of the body to the medicine.

$\frac{dR}{dM} =$ cm − m^2

Score: 1 of 1 pt | 28 of 42 | **Test Score:** 81.59%, 34.27 of 42 pts

3.4.9 | Question Help

The equation for free fall at the surface of a celestial body in outer space (s in meters, t in seconds) is $s = 1.93t^2$. How long does it take a rock falling from rest to reach a velocity of 21.1 $\frac{m}{sec}$ on this celestial body in outer space?

It takes 5.5 sec for a rock falling from rest to reach a velocity of 21.1 $\frac{m}{sec}$ on this celestial body in outer space.
(Round to the nearest tenth as needed.)

Score: 0.6 of 1 pt | 29 of 42

3.4.13

An object is dropped from a tower, 200 ft above the ground. The object's height above ground t sec into the fall is $s = 200 - 16t^2$.
a. What is the object's velocity, speed, and acceleration at time t?
b. About how long does it take the object to hit the ground?
c. What is the object's velocity at the moment of impact?

The object's velocity at time t is $-32t$.

The object's speed at time t is $32t$ $\frac{ft}{sec}$.

The object's acceleration at time t is -32 $\frac{ft}{sec^2}$.
(Simplify your answer.)

It takes 3.5 sec for the object to hit the ground.
(Round to the nearest tenth.)

The object's velocity at the moment of impact is -112 $\frac{ft}{sec}$.
(Round to the nearest tenth.)

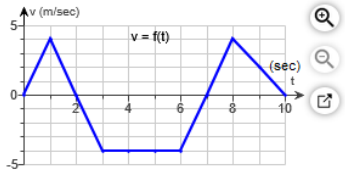
Got this wrong just because I forgot “t”

3.4.15

Question He

The accompanying figure shows the velocity $v = \frac{ds}{dt} = f(t)$ (m / sec) of a body moving along a coordinate line.

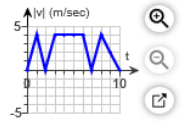
a. When does the body reverse direction?
b. When is it moving at a constant speed?
c. Graph the body's speed for $0 \le t \le 10$.
d. Graph the acceleration, where defined.

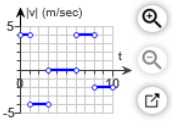


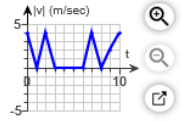
The body reverses direction at t = 2,7 .
(Use a comma to separate answers as needed.)

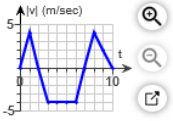
The body moves at a constant speed at $3 \le t \le 6$.

Choose the correct graph of the body's speed for $0 \le t \le 10$.

A.


B.


C.


D.


Choose the correct graph of the acceleration, where defined.

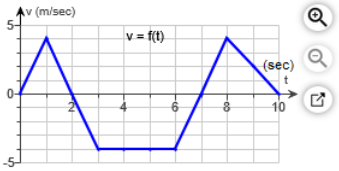
Score: 1 of 1 pt | 30 of 42 | **Test Score:** 81.59%, 34.27 of

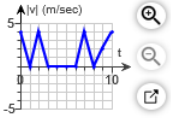
3.4.15

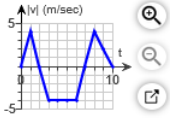
Question Help

The accompanying figure shows the velocity $v = \frac{ds}{dt} = f(t)$ (m / sec) of a body moving along a coordinate line.

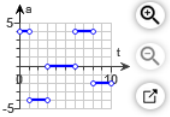
a. When does the body reverse direction?
b. When is it moving at a constant speed?
c. Graph the body's speed for $0 \le t \le 10$.
d. Graph the acceleration, where defined.

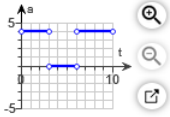


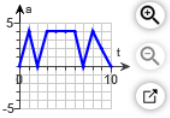
C.


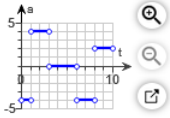
D.


Choose the correct graph of the acceleration, where defined.

A.


B.


C.


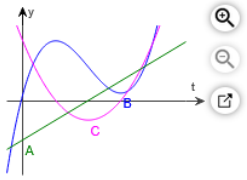
D.


Score: 1 of 1 pt | 31 of 42 | **Test Score:** 81.59%, 34.27 c

3.4.21

Question Hel

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

Score: 1 of 1 pt | 32 of 42 | **Test Score:** 81.59%, 34.27 of 42 pts

3.4.23

Question Help

Suppose that the dollar cost of producing x appliances is $c(x) = 1000 + 90x - 0.1x^2$.
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 $ 84.69 / appliance.
(Round to the nearest cent as needed.)

The marginal cost when 130 appliances are produced is $ 64 .
(Round to the nearest cent as needed.)

The cost of producing one more appliance beyond 130 appliances is $ 63.90 .
(Round to the nearest cent as needed.)

Score: 1 of 1 pt | 33 of 42

3.5.1

Find $\frac{dy}{dx}$ for $y = -7x + 4 \cos x$.

$\frac{d}{dx}(-7x + 4 \cos x) = -7 - 4 \sin x$

Score: 1 of 1 pt | 34 of 42

3.5.2

Find $\frac{dy}{dx}$ for $y = \frac{4}{x} + 7 \sin x$.

$\frac{d}{dx}\left(\frac{4}{x} + 7 \sin x\right) = -\frac{4}{x^2} + 7 \cos x$

Score: 0 of 1 pt

35 of 42

3.5.7

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

$y = 5\cos x \tan x$

Choose the correct answer below.

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

B. $\frac{dy}{dx} = -6\sin x \tan x + 6\sec x$

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

D. $\frac{dy}{dx} = 5\cos x$

No fucking idea and teacher doesn't help

Score: 1 of 1 pt

36 of 42

3.5.15

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

$y = 6(\tan x + \sec x)(\tan x - \sec x)$

$\frac{dy}{dx} = 0$

Score: 1 of 1 pt

37 of 42

3.5.19

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

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

Score: 1 of 1 pt

38 of 42

3.5.23

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

$r = 5 - \theta^3 \sin\theta$

$\frac{dr}{d\theta} = -\theta^3 \cos\theta - 3\theta^2 \sin\theta$

Score: 1 of 1 pt

39 of 42

3.5.25

Find $\frac{dr}{d\theta}$ for the following function.

$r = 3 \sec\theta \csc\theta$

Choose the correct answer below.

A. $\frac{dr}{d\theta} = 3\csc^2\theta - 3\sec^2\theta$

B. $\frac{dr}{d\theta} = 3\sec^2\theta - 3\csc^2\theta$

C. $\frac{dr}{d\theta} = 4\csc^2\theta - 4\sec^2\theta$

D. $\frac{dr}{d\theta} = 4\sec^2\theta - 4\csc^2\theta$

Score: 0 of 1 pt

40 of 42

3.5.29

Find $\frac{dp}{dq}$ for $p = \frac{\cos q - \sin q}{\cos q}$.

$\frac{dp}{dq} = -\sec^2 q$

You answered: $\tan^2 q$

Get answer feedback

Score: 1 of 1 pt

41 of 42

3.5.47

Find the limit.

$$\lim_{x\to 2} \sin\left(-\frac{3\pi}{x}-\frac{\pi}{2}\right)$$

$\lim_{x\to 2} \sin\left(-\frac{3\pi}{x}-\frac{\pi}{2}\right) =$ 0 (Simplify your answer.)

Score: 0.67 of 1 pt

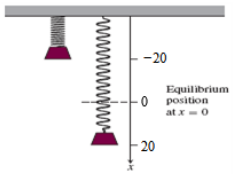
42 of 42

Test Score: 81.59%, 34.27 of 42 pts

3.5.61

Question Help

A weight is attached to a spring and reaches its equilibrium position ($x = 0$). It is then set in motion resulting in a displacement of $x = 20\cos t$, where x is measured in centimeters and t is measured in seconds. See the figure shown to the right. Answer parts **(a)** and **(b)**.



(a) What is the spring's displacement when $t = \frac{\pi}{2}$?

0 cm
(Type an integer or decimal rounded to one decimal place as needed.)

What is the spring's displacement when $t = \frac{\pi}{3}$?

10 cm
(Type an integer or decimal rounded to one decimal place as needed.)

What is the spring's displacement when $t = \frac{5\pi}{4}$?

−14.1 cm
(Type an integer or decimal rounded to one decimal place as needed.)

Score: 0.67 of 1 pt

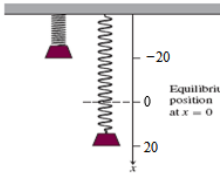
42 of 42

Test Score: 81.59%, 34.27 of 42

3.5.61

Question Help

A weight is attached to a spring and reaches its equilibrium position ($x = 0$). It is then set in motion resulting in a displacement of $x = 20\cos t$, where x is measured in centimeters and t is measured in seconds. See the figure shown to the right. Answer parts **(a)** and **(b)**.



−14.1 cm
(Type an integer or decimal rounded to one decimal place as needed.)

(b) What is the spring's velocity when $t = \frac{\pi}{2}$?

−20 cm/sec
(Type an integer or decimal rounded to one decimal place as needed.)

What is the spring's velocity when $t = \frac{\pi}{3}$?

−17.3 cm/sec
(Type an integer or decimal rounded to one decimal place as needed.)

What is the spring's velocity when $t = \frac{5\pi}{4}$?

14.1 cm/sec
(Type an integer or decimal rounded to one decimal place as needed.)

Question is complete. Tap on the red indicators to see incorrect answers.