

3.4 Hmwk - The Chain Rule (Homework)

 INSTRUCTOR

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Past Due **Due Date: THU, MAR 19, 2026 11:59 PM CDT**

Current Score: 20 / 20 POINTS | 100.0 %

Due date has passed. No changes can be made without an approved extension request.
You may not be granted an extension if you have already viewed the answer key.

 **VIEW ANSWER KEY**

Scoring and Assignment Information ^

QUESTION	1	2	3	4	5	6	7	8	9	10
POINTS	2 / 2	2 / 2	2 / 2	2 / 2	2 / 2	2 / 2	2 / 2	2 / 2	2 / 2	2 / 2

Assignment Submission

For this assignment, you submit answers by question parts. The number of submissions remaining for each question part only changes if you submit or change the answer.

Assignment Scoring

Your best submission for each question part is used for your score.

1. [2 / 2 Points]

DETAILS

MY NOTES

PREVIOUS ANSWERS

ASK YOUR TEACHER

PRACTICE ANOTHER

S_{CalcET9} 3.4.021.

Find the derivative of the function.

$$F(x) = (4x + 5)^3 (x^2 - 7x + 5)^4$$

$F'(x) =$

$$4(4x+5)^2(x^2-7x+5)^3(11x^2-39x-20)$$

✓ Exactly!

Resources

[Read It](#)

2. [2 / 2 Points]

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ASK YOUR TEACHER

PRACTICE ANOTHER

S_{CalcET9} 3.4.033.

Find the derivative of the function.

$$F(t) = e^{2t \sin(2t)}$$

$F'(t) =$

$$4e^{2t \sin(2t)} t \cos(2t) + 2e^{2t \sin(2t)} \sin(2t)$$

✓ Nice work!

Resources

[Read It Watch It](#)

3. [2 / 2 Points]

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S CalcET9 3.4.058.EP.

Consider the following curve.

$$y = \sqrt{8 + x^3}$$

Find $y'(x)$.

$y'(x) =$

$3x^2\sqrt{8+x^3}$

✓ Nice!

Find an equation of the tangent line to the curve at the point (1, 3).

$y = 12x + 52$

✓ Way to go!

Resources

[Read It](#)

4. [2 / 2 Points]

DETAILS

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ASK YOUR TEACHER

PRACTICE ANOTHER

S CalcET9 3.4.042.

Find the derivative of the function.

$$y = e^{\sin(7x)} + \sin(e^{7x})$$

$y' =$

$$7e^{\sin(7x)}\cos(7x) + 7e^{7x}\cos(e^{7x})$$

✓ Impressive work.

Resources

[Read It](#)

5. [2 / 2 Points]

DETAILS

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PRACTICE ANOTHER

S CalcET9 3.4.038.

Find the derivative of the function.

$$g(x) = e^{-x} \cos(x^2)$$

$g'(x) =$

$$-e^{-x}(\cos(x^2) + 2x\sin(x^2))$$

✓ Good work.

Resources

[Read It](#)

6. [2 / 2 Points]

DETAILS

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PRACTICE ANOTHER

S_{CalcET9} 3.4.041.

Find the derivative of the function.

$$y = \sin^2(x^2 + 4)$$

$y' =$

~~4x sin(x^2+4) cos(x^2+4)~~

✔ Well done.

Resources

[Read It](#)

7. [2 / 2 Points]

DETAILS

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PRACTICE ANOTHER

S_{CalcET9} 3.4.026.

Find the derivative of the function.

$$f(t) = 9^{t^3}$$

$f'(t) =$

~~31+2t3t2ln(9)~~

✔ That's it!

Resources

[Read It](#)

8. [2 / 2 Points]

DETAILS

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PRACTICE ANOTHER

SCalcET9 3.4.090.

Under certain circumstances a rumor spreads according to the equation

$$p(t) = \frac{1}{1 + ae^{-kt}}$$

where $p(t)$ is the proportion of the population that has heard the rumor at time t and a and k are positive constants. [In a future chapter we will see that this is a reasonable equation for $p(t)$.]

- (a) Find $\lim_{t \rightarrow \infty} p(t)$.

\$\$\$1

✓ Outstanding!

Interpret your answer.

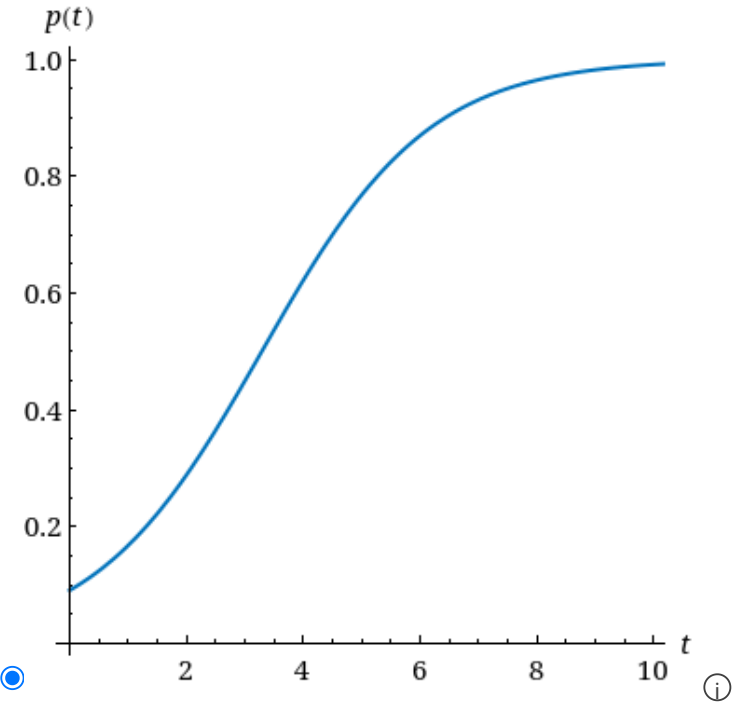
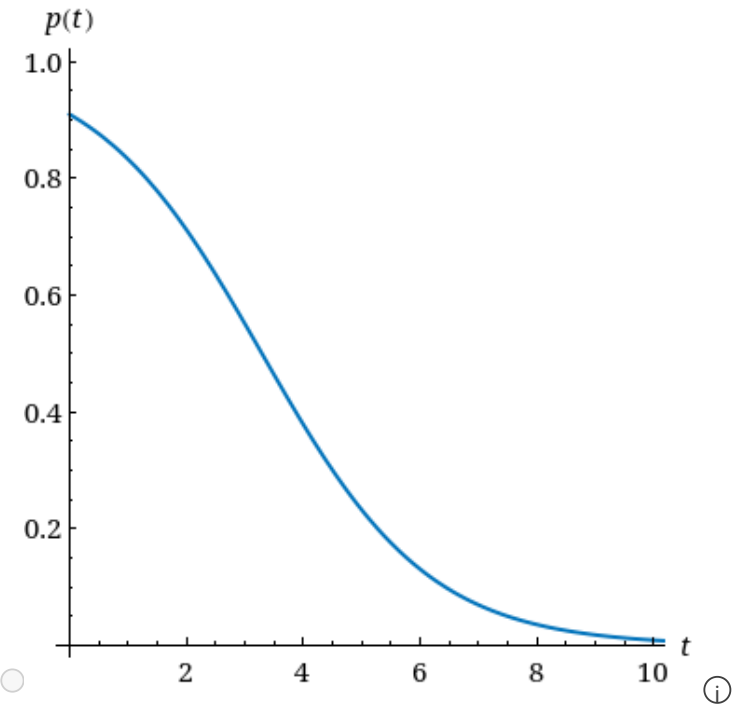
As ✓, ✓.

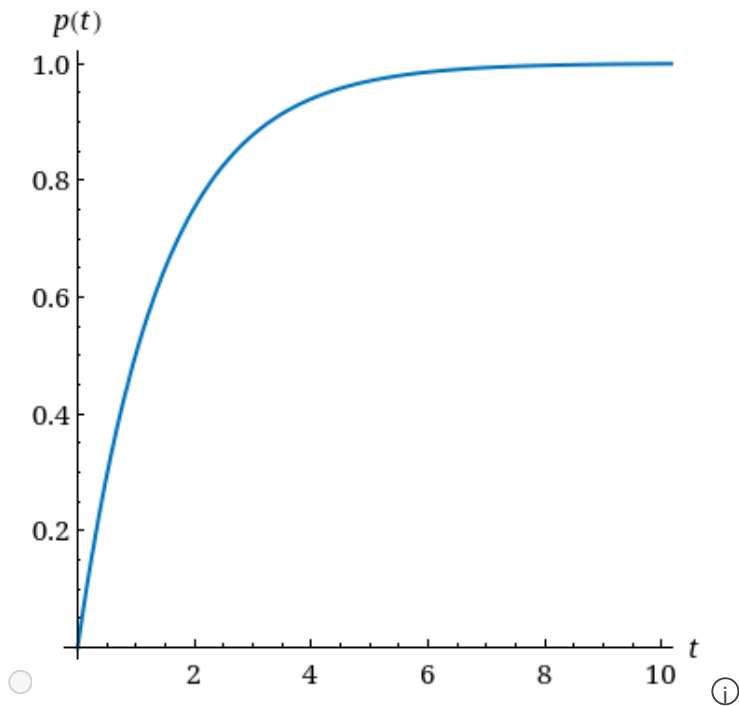
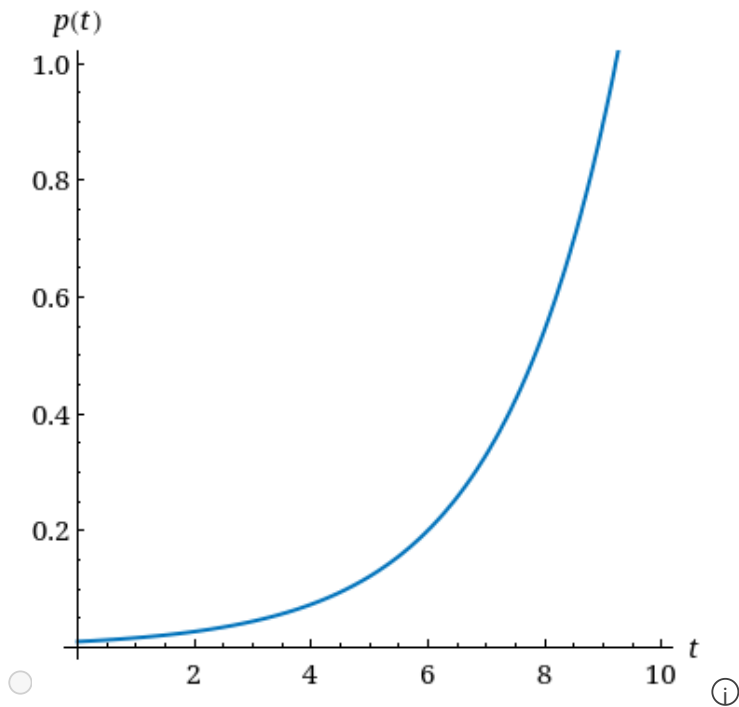
- (b) Find the rate of spread of the rumor.

\$\$\$ake-kt(1+ae-kt)2

✓ Nice job!

- (c) Graph p for the case $a = 10$, $k = 0.7$ with t measured in hours.





✓ That's right!

How long (in hr) it will take for 70% of the population to have heard the rumor? (A graphing calculator is recommended. Round your answer to the nearest tenth of an hour.)

4.5 ✓ hr

Resources

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9. [2 / 2 Points]

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PRACTICE ANOTHER

SCalcET9 3.4.077.

Let $r(x) = f(g(h(x)))$, where $h(1) = 2$, $g(2) = 5$, $h'(1) = 4$, $g'(2) = 4$, and $f'(5) = 7$. Find $r'(1)$.

$r'(1) =$  That's it!

Resources

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10. [2 / 2 Points]

DETAILS

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ASK YOUR TEACHER

PRACTICE ANOTHER

S_{Cal}ET9 3.4.062.

A graphing calculator is recommended.

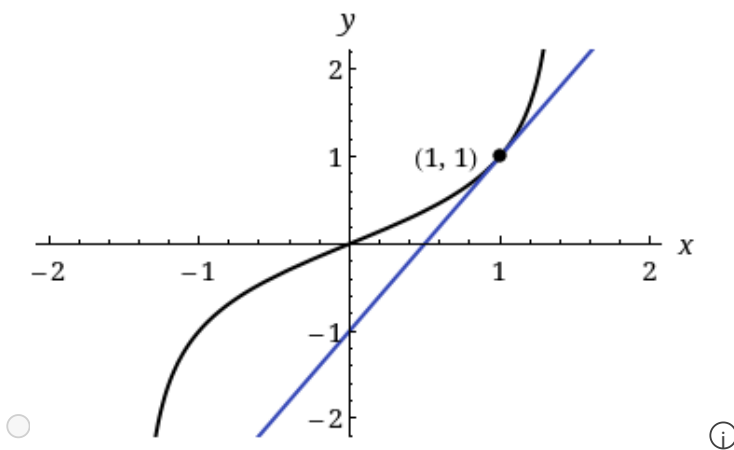
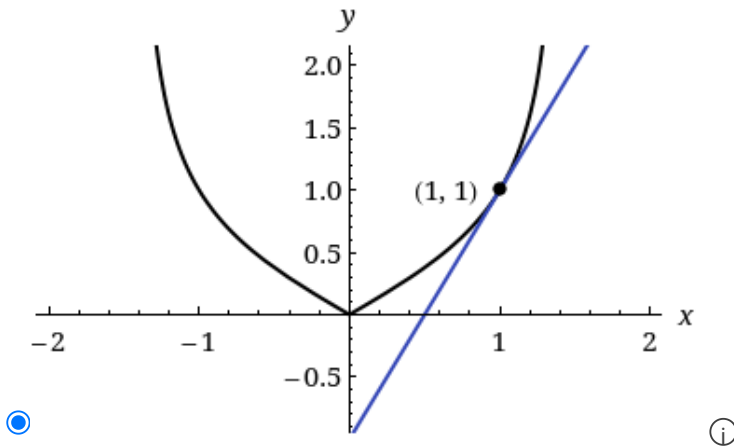
The curve $y = \frac{|x|}{\sqrt{2-x^2}}$ is called a *bullet-nose curve*.

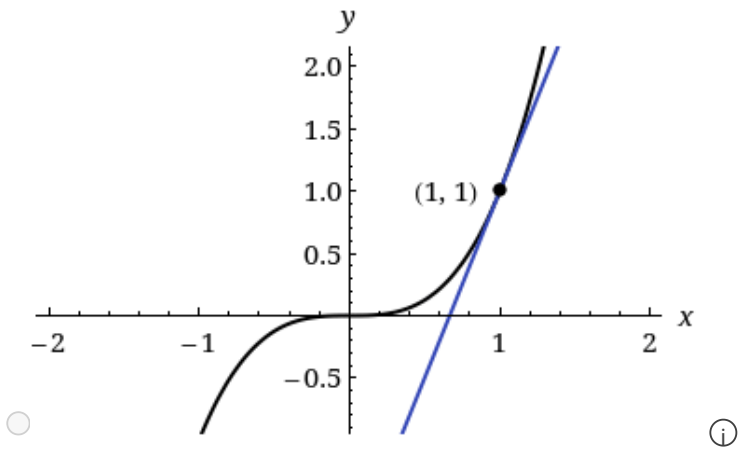
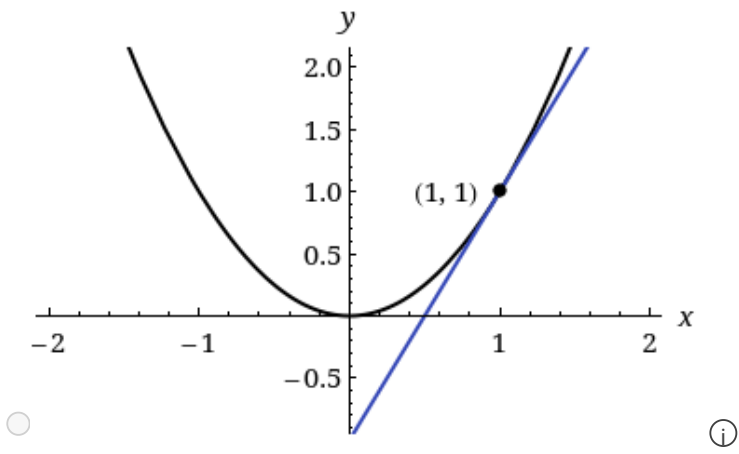
- (a) Find an equation of the tangent line to this curve at the point (1, 1).

$y=2x-1$

✓ Impressive work!

- (b) Illustrate part (a) by graphing the curve and the tangent line on the same screen.





✓ Nice job.

Resources

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