

1. [-/1 Points]

**DETAILS**

SCALCET9 3.1.006.MI.

Differentiate the function.

$$g(x) = \frac{1}{4}x^2 - 8x + 13$$

 $g'(x) =$ **Need Help?****Master It**

2. [-/1 Points]

**DETAILS**

SCALCET9 3.1.019.MI.

Differentiate the function.

$$f(x) = x^3(x + 8)$$

 $f'(x) =$ **Need Help?****Watch It****Master It**

3. [-/1 Points]

**DETAILS**

SCALCET9 3.XP.1.015.

Differentiate the function.

$$g(t) = 2t^{-1/4}$$

 $g'(t) =$ **Need Help?****Watch It**

4. [-/1 Points]

**DETAILS**

SCALCET9 3.1.021.MI.

Differentiate the function.

$$y = 2e^x + \frac{5}{\sqrt[3]{x}}$$

 $y' =$ **Need Help?****Watch It****Master It**

5. [-/10 Points]

DETAILS

SCALCET9 3.1.033.MI.SA.

*This question has several parts that must be completed sequentially. If you skip a part of the question, you will not receive any points for the skipped part, and you will not be able to come back to the skipped part.*

**Tutorial Exercise**

Differentiate the function.

$$y = \frac{3w^2 - 9w + 5}{\sqrt{w}}$$

[Click here to begin!](#)

6. [-/1 Points]

DETAILS

SCALCET9 3.1.037.

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

$$y = 3x^3 - x^2 + 9, (2, 29)$$

y =

**Need Help?**[Watch It](#)

7. [-/2 Points]

**DETAILS**

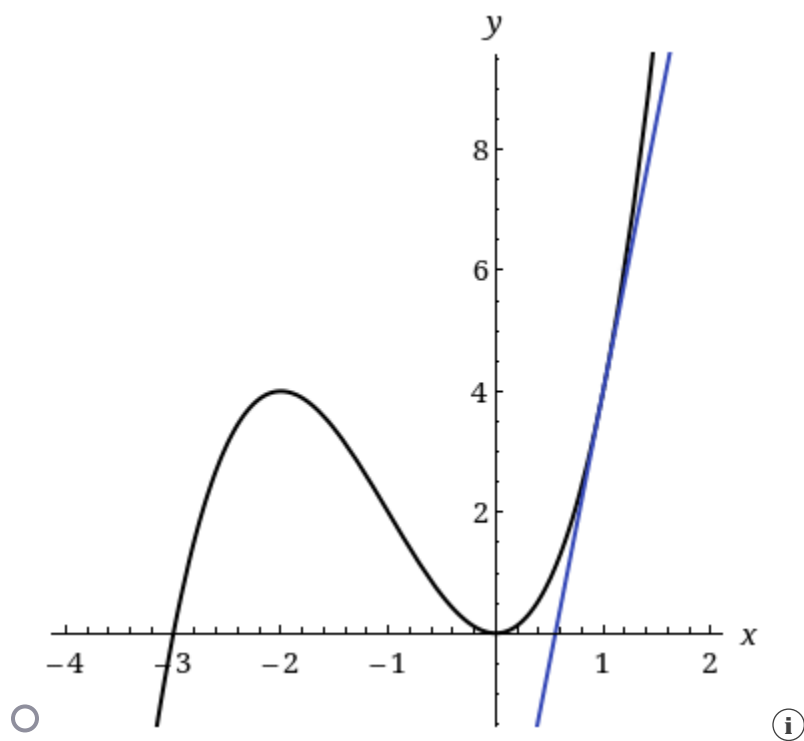
SCALCET9 3.1.043.

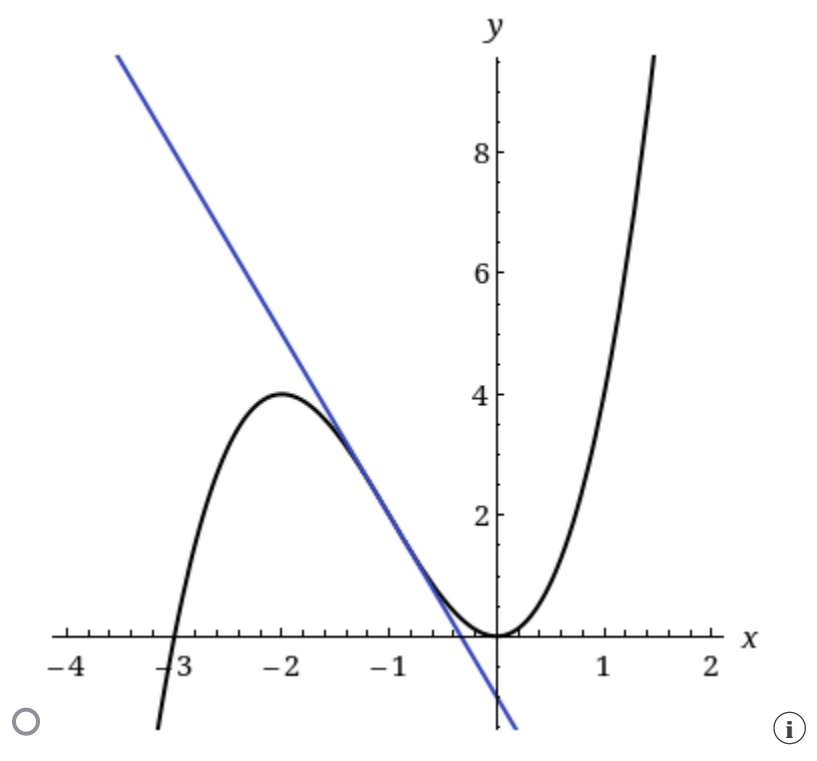
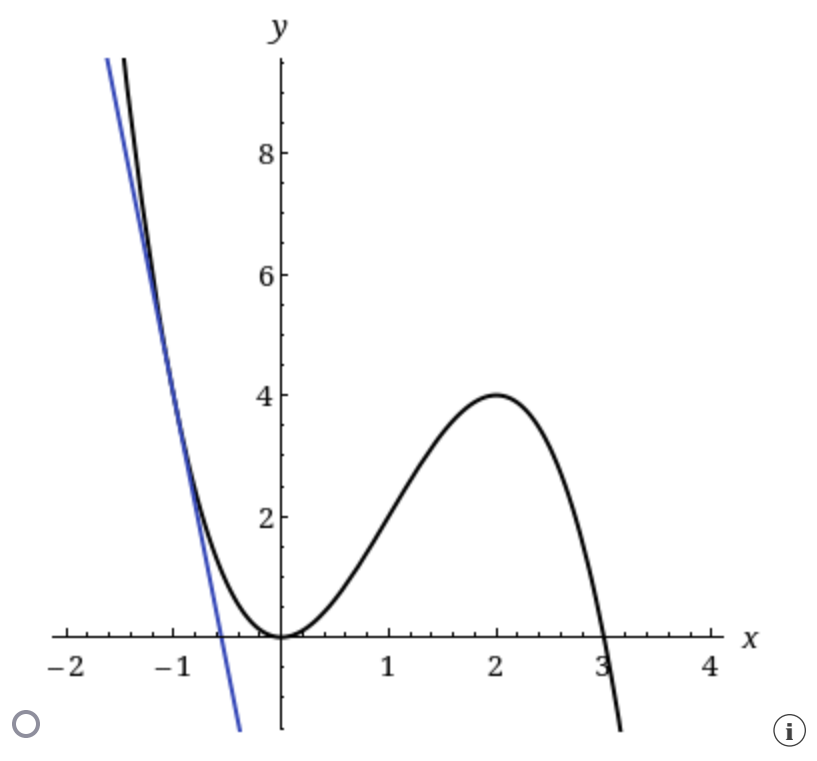
Find an equation of the tangent line to the curve at the given point.

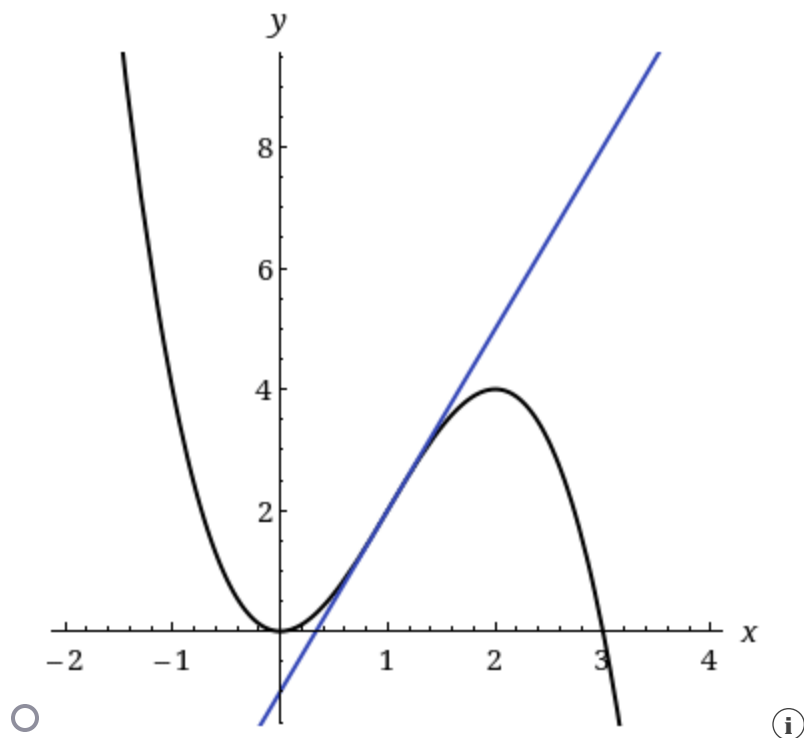
$$f(x) = 3x^2 - x^3, \quad (1, 2)$$

$y =$

Illustrate by graphing the curve and the tangent line on the same screen.







Need Help?

Watch It

8. [-/2 Points]

DETAILS

SCALCET9 3.1.052.

Find the first and second derivatives of the function. Check to see that your answers are reasonable by comparing the graphs of  $f$ ,  $f'$ , and  $f''$ .

$$f(x) = e^x - x^3$$

$$f'(x) = \text{[input box]}$$

$$f''(x) = \text{[input box]}$$

9. [-/2 Points]

DETAILS

SCALCET9 3.1.055.

Biologists have proposed a cubic polynomial to model the length  $L$  of Alaskan rockfish at age  $A$ :

$$L = 0.0155A^3 - 0.372A^2 + 3.95A + 1.21,$$

where  $L$  is measured in inches and  $A$  in years. Calculate  $\frac{dL}{dA} \Big|_{A=15}$ . (Round your answer to three decimal places.)

$$\frac{dL}{dA} \Big|_{A=15} = \boxed{\phantom{000000}} \text{ in/yr}$$

Interpret your answer.

- A 15-year old rock fish shrinks at a rate of 3.253 in/yr.
- A 15-year old rock fish grows at a rate of 51.860 in/yr.
- A 15-year old rock fish grows at a rate of 55.113 in/yr.
- A 15-year old rock fish grows at a rate of 3.253 in/yr.
- A 15-year old rock fish shrinks at a rate of 55.113 in/yr.

10. [-/1 Points]

DETAILS

SCALCET9 3.1.079.

Find the parabola with equation  $y = ax^2 + bx$  whose tangent line at  $(1, -1)$  has equation  $y = 2x - 3$ .

 $y =$ 

Need Help?

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11. [-/1 Points]

**DETAILS**

SCALCET9 3.XP.1.017.

Differentiate the function.

$$h(x) = (x - 3)(5x + 8)$$

$$h'(x) =$$

**Need Help?****Watch It**

12. [-/1 Points]

**DETAILS**

SCALCET9 3.XP.1.025.

Differentiate the function.

$$u = \sqrt[3]{t} + 2\sqrt{t^3}$$

$$u' =$$

**Need Help?****Watch It**

13. [-/1 Points]

**DETAILS**

SCALCET9 3.XP.1.028.

Differentiate the following function.

$$y = 9e^x + 5$$

$$y' =$$