

Week 4 Friday Homework (1321979)

Question 1234567891011121314151617181920

1. Question DetailsSCalcET6 2.7.003. [1287988]

Consider the parabola $y = 7x - x^2$.

(a) Find the slope of the tangent line to the parabola at the point $(1, 6)$.

(b) Find an equation of the tangent line in part (a).

$y =$

2. Question DetailsSCalcET6 2.7.006. [1288539]

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

$$y = 4x^3 - 3x$$

$y =$

3. Question DetailsSCalcET6 2.7.007.MI. [1386681]

Find an equation of the tangent line to the curve at the point $(49, 7)$.

$$y = \sqrt{x}$$

$y =$

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4. Question DetailsSCalcET6 2.7.009. [1288263]

Consider the following curve.

$$y = 1 + 4x^2 - 2x^3.$$

(a) Find the slope of the tangent to the curve at the point where $x = a$.

$m =$

(b) Find the equation of the tangent line at the point $(1, 3)$.

$f(x) =$

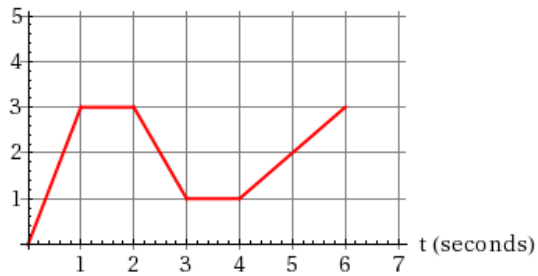
(c) Find the equation of the tangent line at the point $(2, 1)$.

$g(x) =$

5. Question DetailsSCalcET6 2.7.011. [679818]

A particle starts by moving to the right along a horizontal line; the graph of its position function is shown. (Choose all that apply.)

s (meters)



(a) When is the particle moving to the right?

- (0, 1)
 (1, 2)
 (2, 3)
 (3, 4)
 (4, 6)

(b) When is the particle moving to the left?

- (0, 1)
 (1, 2)
 (2, 3)
 (3, 4)
 (4, 6)

(c) When is the particle standing still?

- (0, 1)
 (1, 2)
 (2, 3)
 (3, 4)
 (4, 6)

6. Question DetailsSCalcET6 2.7.018. [1356556]

Find an equation of the tangent line to the graph of $y = g(x)$ at $x = 5$ if $g(5) = -3$ and $g'(5) = 4$.

$y =$

If the tangent line to $y = f(x)$ at $(4, 7)$ passes through the point $(0, 6)$, find $f(4)$ and $f'(4)$.

$f(4) =$

$f'(4) =$

7. Question DetailsSCalcET6 2.7.024. [1288658]

Consider the function below.

$$G(x) = 2x^2 - x^3$$

(a) Find $G'(a)$.(b) Use the answer from part (a) to find an equation of the tangent line to the curve $y = G(x)$ at the point $(2, 0)$.

$$y = \text{[]}$$

(c) Use the answer from part (a) to find an equation of the tangent line to the curve $y = G(x)$ at the point $(3, -9)$.

$$y = \text{[]}$$

8. Question DetailsSCalcET6 2.7.027.MI. [1386707]Find $f'(a)$.

$$f(t) = \frac{4t + 20}{t + 9}$$

$$f'(a) = \text{[]} \quad \text{Tutorial}$$

9. Question DetailsSCalcET6 2.7.031. [679858]The limit represents the derivative of some function f at some number a . Select an appropriate $f(x)$ and a .

$$\lim_{h \rightarrow 0} \frac{(1+h)^6 - 1}{h}$$

- $f(x) = x^5, a = 2$
- $f(x) = x^6, a = 1$
- $f(x) = x^7, a = 0$
- $f(x) = x^6 - x, a = 1$
- $f(x) = x^6 + x, a = 0$

10. Question DetailsSCalcET6 2.7.033. [679822]The limit represents the derivative of some function f at some number a . Select an appropriate $f(x)$ and a .

$$\lim_{x \rightarrow 2} \frac{4^x - 16}{x - 2}$$

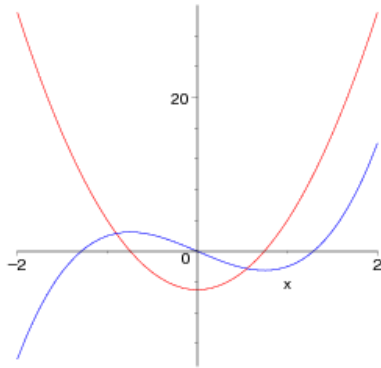
- $f(x) = 4^x, a = 16$
- $f(x) = 4^x, a = 2$
- $f(x) = 2^x, a = 4$
- $f(x) = x^4, a = 2$
- $f(x) = 2^x, a = 16$

11. Question DetailsSCalcET6 2.7.035. [679927]The limit represents the derivative of some function f at some number a . Select an appropriate $f(x)$ and a .

$$\lim_{h \rightarrow 0} \frac{\cos(\pi + h) + 1}{h}$$

- $f(x) = \cos(x), a = \pi$
- $f(x) = \sin(x), a = \pi$
- $f(x) = \tan(x), a = \pi$
- $f(x) = \cos(x), a = \pi/4$

12. Question DetailsSCalcET6 2.8.AE.02. [1288243]



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EXAMPLE 2 (a) If $f(x) = 3x^3 - 5x$, find a formula for $f'(x)$.
 (b) Illustrate by comparing the graphs of f and f' .

SOLUTION (a) When computing a derivative, we must remember that the variable is h and that x is temporarily regarded as a constant during the calculation of the limit.

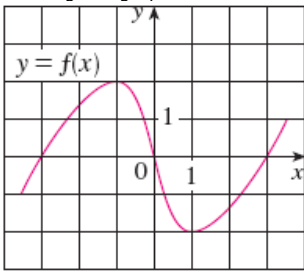
$$\begin{aligned}
 f'(x) &= \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h} \\
 &= \lim_{h \rightarrow 0} \frac{[3(\boxed{})^3 - 5(x+h)] - [3x^3 - 5x]}{h} \\
 &= \lim_{h \rightarrow 0} \frac{3x^3 + \boxed{} - 5x - 5h - 3x^3 + 5x}{h} \\
 &= \lim_{h \rightarrow 0} \frac{\boxed{} - 5h}{h} \\
 &= \lim_{h \rightarrow 0} (\boxed{} + 9xh + 3h^2 - 5) \\
 &= \boxed{}
 \end{aligned}$$

(b) We use a graphing device to graph f and f' in the figure. Notice that $f'(x) = 0$ when f has horizontal tangents, and $f'(x)$ is positive when the tangents have positive slope. So these graphs serve as a check on our work in part (a).

13. Question DetailsSCalcET6 2.8.Tut.01. [697557]

15. Question DetailsSCalcET6 2.8.001. [795719]

Use the given graph to estimate the value of each derivative. (Round all answers to one decimal place.)



(a) $f'(-3)$

(b) $f'(-2)$

(c) $f'(-1)$

(d) $f'(0)$

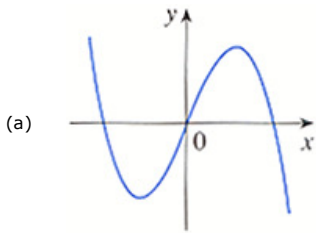
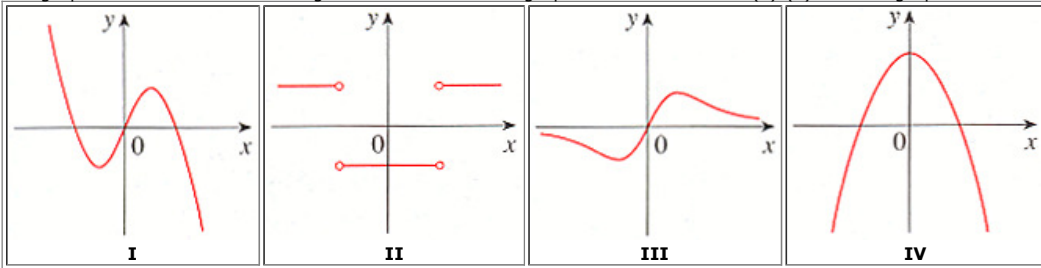
(e) $f'(1)$

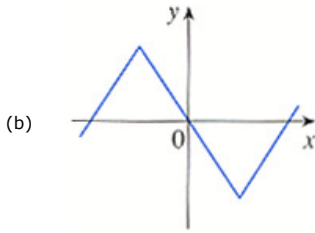
(f) $f'(2)$

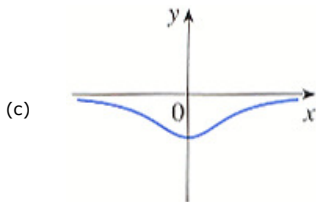
(g) $f'(3)$

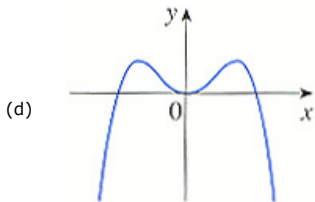
16. Question DetailsSCalcET6 2.8.003.MI. [1386944]

The graphs of four derivatives are given below. Match the graph of each function in (a)-(d) with the graph of its derivative in I-IV.



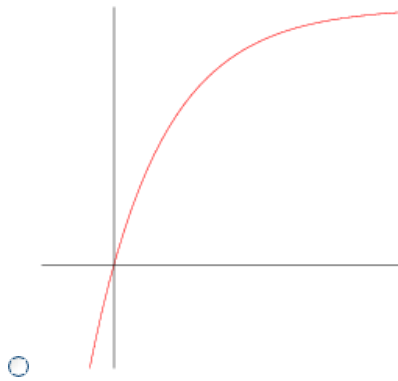
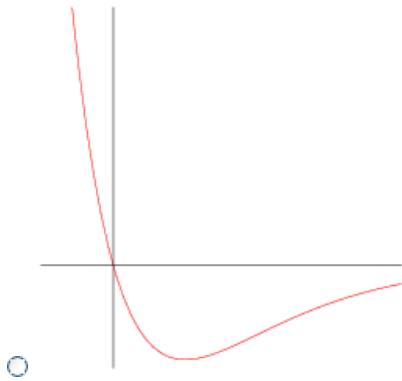
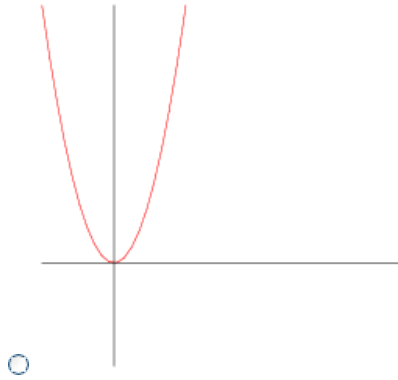
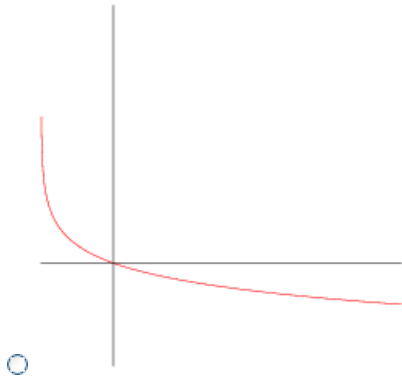
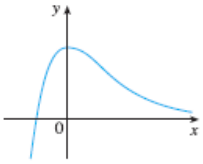




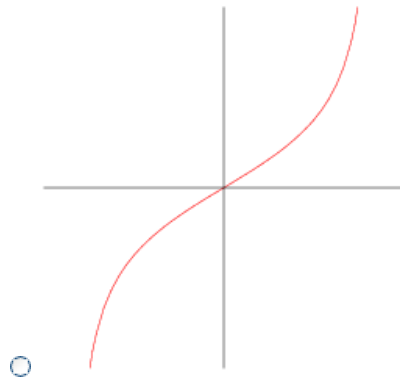
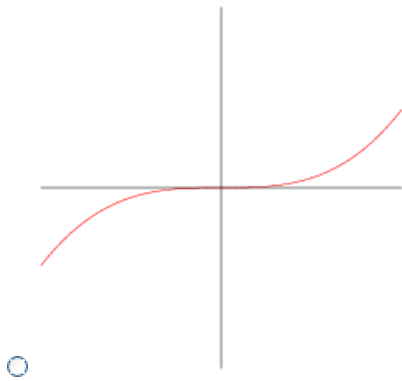
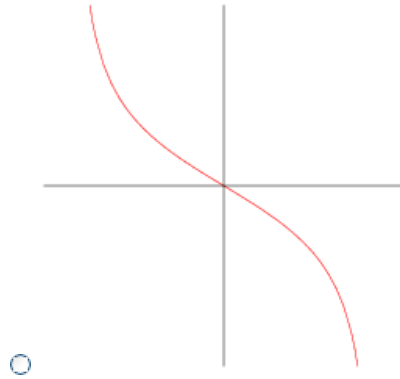
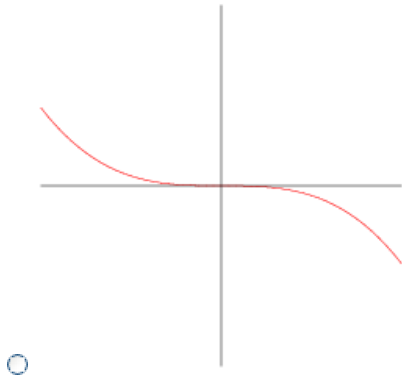
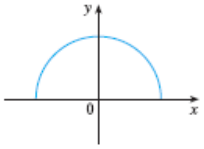


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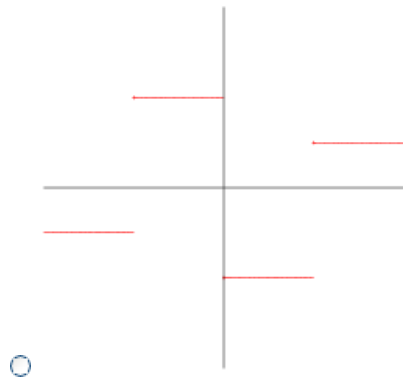
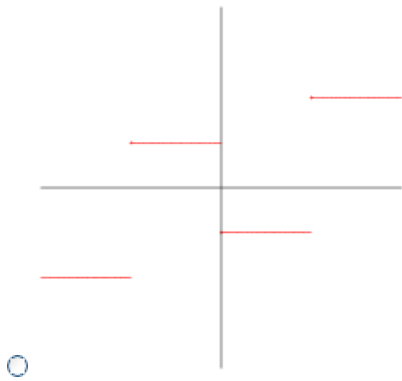
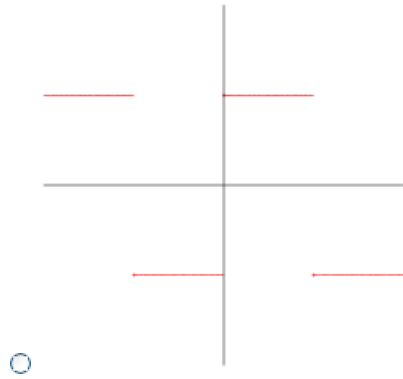
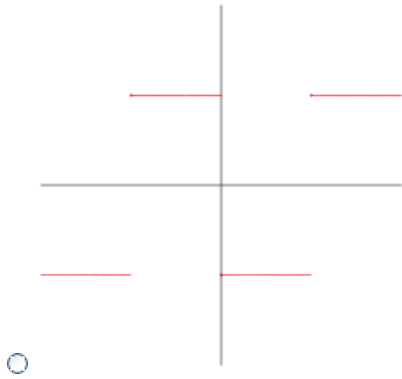
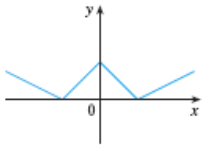
17. Question DetailsSCalcET6 2.8.005. [795717]
The graph of a function f is given. Select the graph of f' .



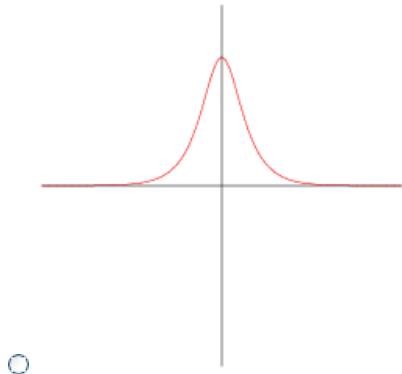
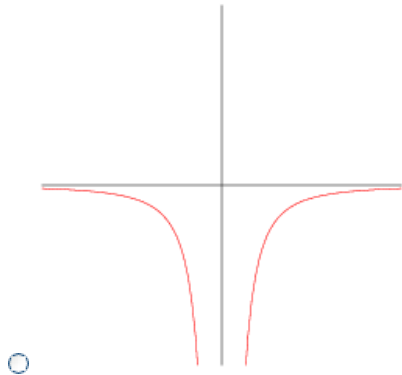
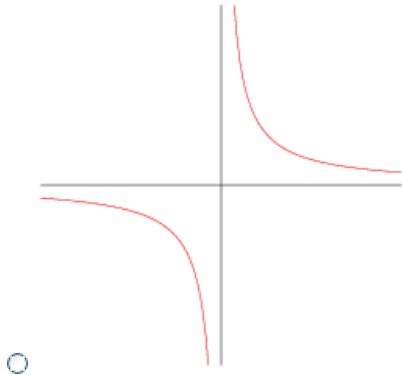
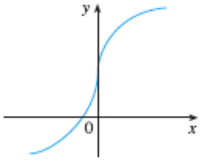
18. Question DetailsSCalcET6 2.8.007. [795742]
The graph of a function f is given. Select the graph of f' .



19. Question DetailsSCalcET6 2.8.009. [795738]
 The graph of a function f is given. Select the graph of f' .



20. Question DetailsSCalcET6 2.8.011. [795723]
 The graph of a function f is given. Select the graph of f' .



Assignment Details

Name (AD): **Week 4 Friday Homework (1321979)**

Submissions Allowed: **5**

Category: **Homework**

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Locked: **No**

Author: **Jernigan, John** (jjernigan@ccp.edu)

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