1. (1 pt) Find the derivative of $f(x) = 2e^x + x^9$.
$f'(x) =$ _____
Answer(s) submitted:
•
(incorrect)

2. (1 pt) Find the derivative of $f(t) = (\ln 6)^t$.
$f'(t) =$ _____
Answer(s) submitted:
•
(incorrect)

3. (1 pt) Find the derivative of $f(x) = e^{4.15} + 4.15^x$.
$f'(x) =$ _____
Answer(s) submitted:
•
(incorrect)

4. (1 pt) Find the derivative of $f(x) = e^d + d^x$. Assume that d is a constant.
$f'(x) =$ _____
Answer(s) submitted:
•
(incorrect)

5. (1 pt) Find the derivative of the function $y(x) = c^x + x^c$. Assume that c is a constant.
$y'(x) =$ _____
Answer(s) submitted:
•
(incorrect)

6. (1 pt) Since January 1, 1960, the population of Slim Chance has been described by the formula $P = 45000(0.98)^t$, where P is the population of the city t years after the start of 1960. At what rate was the population changing on January 1, 1977?
rate = _____ people/yr
Answer(s) submitted:
•
(incorrect)

7. (1 pt) Certain pieces of antique furniture increased very rapidly in price in the 1970s and 1980s. For example, the value of a particular rocking chair is well approximated by

$$V = 70(1.25)^t,$$

where V is in dollars and t is the number of years since 1975. Find the rate, in dollars per year, at which the price is increasing.
rate = _____ dollars/yr
Answer(s) submitted:
•
(incorrect)

8. (1 pt) Consider $f(x) = 15 - e^x$.
A. Find the slope of the graph of $f(x)$ at the point where the graph crosses the x-axis.
slope = _____
B. Find the equation of the tangent line to the curve at this point.
$y =$ _____
C. Find the equation of the line perpendicular to the tangent line at this point. (This is the *normal* line.)
$y =$ _____
Answer(s) submitted:
•
•
•
(incorrect)

9. (1 pt) Find the derivative of the function $f(x)$, below. It may be to your advantage to simplify first.
$f(x) = x \cdot 15^x$
$f'(x) =$ _____
Answer(s) submitted:
•
(incorrect)

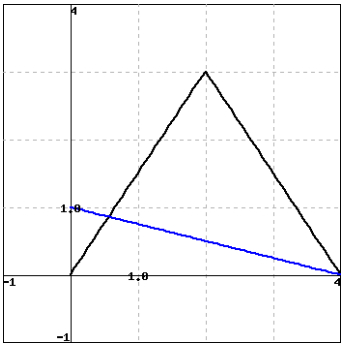
10. (1 pt) Find the derivative of the function $f(x)$, below. It may be to your advantage to simplify first.
$f(x) = (x^6 - \sqrt[5]{x})4^x$
$f'(x) =$ _____
Answer(s) submitted:
•
(incorrect)

11. (1 pt) Find the derivative of the function z, below. It may be to your advantage to simplify first.
$z = \dfrac{8t+1}{8t+10}$
$\frac{dz}{dt} =$ _____
Answer(s) submitted:
•
(incorrect)

12. (1 pt) Find the derivative of the function $h(r)$, below. It may be to your advantage to simplify first.
$h(r) = \dfrac{r^9}{6r+15}$
$h'(r) =$ _____
Answer(s) submitted:
•

(incorrect)

13. (1 pt) Use the figure below to estimate the indicated derivatives, or state that they do not exist. If a derivative does not exist, enter **dne** in the answer blank. The graph of $f(x)$ is black and has a sharp corner at $x = 2$. The graph of $g(x)$ is blue.



Let $h(x) = f(x) \cdot g(x)$. Find

A. $h'(1) =$ _____

B. $h'(2) =$ _____

C. $h'(3) =$ _____

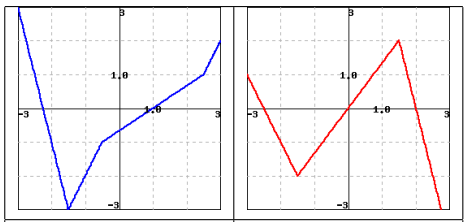
(Enter **dne** *for any derivative that does not exist.)*

Answer(s) submitted:

-
-
-

(incorrect)

14. (1 pt) Let $h(x) = f(x) \cdot g(x)$, and $k(x) = f(x)/g(x)$. Use the figures below to find the values of the indicated derivatives.



$f(x)$ | $g(x)$

A. $h'(-1) =$ _____

B. $k'(1) =$ _____

(Enter **dne** *for any answer where the derivative does not exist.)*

Answer(s) submitted:

-
-

(incorrect)

15. (1 pt) If $F(4) = 2, F'(4) = 1, H(4) = 5, H'(4) = 4$, find:

A. $G'(4)$ if $G(z) = F(z) \cdot H(z)$: $G'(4) =$ _____

B. $G'(4)$ if $G(w) = F(w)/H(w)$: $G'(4) =$ _____

Answer(s) submitted:

-
-

(incorrect)

16. (1 pt) Find the derivative of $s(q) = 19\cos q \sin q$.

$s'(q) =$ _____

Answer(s) submitted:

-

(incorrect)

17. (1 pt) Find the derivative of $f(x) = x^6 \cos x$

$f'(x) =$ _____

Answer(s) submitted:

-

(incorrect)

18. (1 pt) Find the derivative of $h(t) = t\tan t + \sin t$

$h'(t) =$ _____

Answer(s) submitted:

-

(incorrect)