
Differentiate $y = e^t \sin(\pi t - 1)$
Answer: $\frac{dy}{dt} =$ ______________________
Answer(s) submitted:

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(incorrect)

Differentiate $y = (\cos(2q))(\tan q)$
Answer: $\frac{dy}{dq} =$ ______________________
Answer(s) submitted:

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(incorrect)

Differentiate $z = \sin(y^2+4)e^{y/2}$
Answer: $\frac{dz}{dy} =$ ______________________
Answer(s) submitted:

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(incorrect)

Differentiate $y = \dfrac{\sin q}{1+\cos q}$
Answer: $\frac{dy}{dq} =$ ______________________
Answer(s) submitted:

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(incorrect)

Differentiate $y = \dfrac{\sqrt{1-x}}{10+x}$
Answer: $\frac{dy}{dx} =$ ______________________
Answer(s) submitted:

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(incorrect)

Differentiate $f(t) = \dfrac{t^4 - 2t + 5}{\cos(3t)}$
Answer: $f'(t) =$ ______________________
Answer(s) submitted:

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(incorrect)

Differentiate $V = Q\tan(Ny) - M$, where M, N and Q are constants
Answer: $\frac{dV}{dy} =$ ______________________
Answer(s) submitted:

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(incorrect)

Differentiate $B(x) = \sqrt{Mx^2 - N}$, where M and N are constants
Answer: $B'(x) =$ ______________________
Answer(s) submitted:

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(incorrect)

Differentiate $y = \sqrt{\sin(3\pi x)}$
Answer: $\frac{dy}{dx} =$ ______________________
Answer(s) submitted:

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(incorrect)

Differentiate $f(x) = x\sqrt{2+x^2}$
Answer: $f'(x) =$ ______________________
Answer(s) submitted:

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(incorrect)

Differentiate $B(t) = 10(\tan(t))^e$
Answer: $B'(t) =$ ______________________
Answer(s) submitted:

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(incorrect)

Differentiate $f(s) = s\tan(\tan(s))$
Answer: $f'(s) =$ ______________________
Answer(s) submitted:

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(incorrect)

Differentiate $B(x) = 5(\sin(x))^2 - 6$
Answer: $B'(x) =$ ______________________
Answer(s) submitted:

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(incorrect)

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14. (0 pts)
Let $F(x) = f(x^7)$ and $G(x) = (f(x))^7$. You also know that $a^6 = 15, f(a) = 2, f'(a) = 4, f'(a^7) = 2$.
Find $F'(a) =$ _____ and $G'(a) =$ _____.

Answer(s) submitted:

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(incorrect)

15. (0 pts)
Let $F(x) = f(f(x))$ and $G(x) = (F(x))^2$. You also know that $f(8) = 13, f(13) = 2, f'(13) = 9, f'(8) = 2$.
Find $F'(8) =$ ____ and $G'(8) =$ ____.

Answer(s) submitted:

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(incorrect)

16. (0 pts) Let

$$f(x) = \sin(\sqrt{e^{x^3 \sin(x)}}\,)$$

$f'(x) =$ ________________________________

Answer(s) submitted:

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(incorrect)

17. (0 pts) If $f(x) = 4x^2 - 7x + 5$, find $f'(2)$. ________
Use this to find the equation of the tangent line to the parabola $y = 4x^2 - 7x + 5$ at the point $(2, 7)$. The equation of this tangent line can be written in the form $y = mx + b$ where m is:________
and where b is: ________

Answer(s) submitted:

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(incorrect)

18. (0 pts) If $f(x) = \frac{4}{x-2}$, find $f'(4)$.

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Use this to find the equation of the tangent line to the curve $y = \frac{4}{x-2}$ at the point $(4, -2.00000)$. The equation of this tangent line can be written in the form $y = mx + b$ where m is:
____

and where b is:________

Answer(s) submitted:

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(incorrect)

19. (0 pts)

On a separate piece of paper, sketch the graph of the parabola $y = x^2 + 8$. On the same graph, plot the point $(0, -3)$. Note that there are two tangent lines of $y = x^2 + 8$ that pass through the point $(0, -3)$.

Specifically, the tangent line of the parabola $y = x^2 + 8$ at the point $(a, a^2 + 8)$ passes through the point $(0, -3)$ where $a > 0$.

The other tangent line that passes through the point $(0, -3)$ occurs at the point $(-a, a^2 + 8)$.

Find the number a. ________

Answer(s) submitted:

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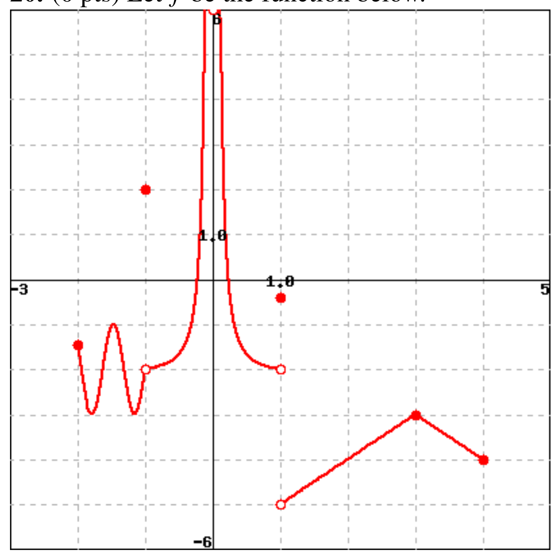
(incorrect)

20. (0 pts) Let f be the function below.



Use **interval notation** to indicate where $f(x)$ is continuous. If it is continuous on more than one interval, use U for union. You may click on the graph to make it larger.

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Answer(s) submitted:

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(incorrect)

21. (0 pts) For what value of the constant c is the function f continuous on $(-\infty, \infty)$ where

$$f(s) = \begin{cases} cs + 9 & \text{if } s \in (-\infty, 6] \\ cs^2 - 9 & \text{if } s \in (6, \infty) \end{cases}$$

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Answer(s) submitted:

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(incorrect)

22. (0 pts)
A function $f(x)$ is said to have a **removable** discontinuity at $x = a$ if:
1. f is either not defined or not continuous at $x = a$.
2. $f(a)$ could either be defined or redefined so that the new function IS continuous at $x = a$.

Let $f(x) = \begin{cases} x^2 + 16x + 65, & \text{if } x < -8 \\ 2, & \text{if } x = -8 \\ -x^2 - 16x - 63, & \text{if } x > -8 \end{cases}$
Show that $f(x)$ has a removable discontinuity at $x = -8$ and determine what value for $f(-8)$ would make $f(x)$ continuous at $x = -8$.
Must redefine $f(-8) =$______.
Now for fun, try to graph $f(x)$. It's just a couple of parabolas!
Answer(s) submitted:

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(incorrect)

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23. (0 pts)
A function $f(x)$ is said to have a **jump** discontinuity at $x = a$ if:
1. $\lim_{x\to a^-} f(x)$ exists.
2. $\lim_{x\to a^+} f(x)$ exists.
3. The left and right limits are not equal.

Let $f(x) = \begin{cases} 4x - 8, & \text{if } x < 6 \\ \frac{5}{x+9}, & \text{if } x \geq 6 \end{cases}$
Show that $f(x)$ has a jump discontinuity at $x = 6$ by calculating the limits from the left and right at $x = 6$.
$\lim_{x\to 6^-} f(x) =$______
$\lim_{x\to 6^+} f(x) =$______
Now for fun, try to graph $f(x)$.
Answer(s) submitted:

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(incorrect)

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24. (0 pts)
Let $f(x) = \begin{cases} mx - 11, & \text{if } x < -10 \\ x^2 + 2x - 1, & \text{if } x \geq -10 \end{cases}$
If $f(x)$ is a function which is continuous everywhere, then we must have
$m =$______
Now for fun, try to graph $f(x)$.
Answer(s) submitted:

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(incorrect)

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25. (0 pts) Let $f(x) = x^4 + 5x^3 + 5x^2 + 3x$.
Then $f'(x)$ is ________
and $f'(3)$ is ________
$f''(x)$ is ________
and $f''(3)$ is ________
Answer(s) submitted:

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(incorrect)

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26. (0 pts) Let $f(x) = \sqrt{x^2 + 10}$.
Then $f'(x)$ is ____________
$f'(5)$ is ____________,
$f''(x)$ is ____________
and $f''(5)$ is ____________
Answer(s) submitted:

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-

(incorrect)

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27. (0 pts) Let $f(x) = x\sin(x)$. Find $f''(3.9)$.
(Remember – radian mode!)

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Answer(s) submitted:

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(incorrect)