Problem 1. 27. (1 pt) If $f(u) = \sqrt{9}\,u + \sqrt{5u}$, find $f'(u)$

——————————

Answer(s) submitted:

- ((sqrt(5))/(2sqrt(u)))+3

(correct)
Correct Answers:

- sqrt(9)+sqrt(5)/(2*sqrt(u))

Problem 2. 29. (1 pt) Find the first and second derivative of the function.
$$f(x) = 3\sin x + 12\cos x.$$

$f'(x) = $ ——————————

$f''(x) = $ ——————————

Answer(s) submitted:

- 3(cos(x) - 4sin(x))
- -3(sin(x) + 4cos(x))

(correct)
Correct Answers:

- 3*cos(x) - 12*sin(x)
- -3*sin(x) - 12*cos(x)

Problem 3. 28. (1 pt) If $f(t) = 6\sin t - 3\pi\cos t$, find $f'(t)$

——————————

Answer(s) submitted:

- (3 pi)sin(t) + 6cos(t)

(correct)
Correct Answers:

- 6*cos(t) +3*3.14159265358979*sin(t)

Problem 4. 25. (1 pt) If $f(x) = \frac{6x^5 - 8x^4 + 2x^3}{x^4}$, find $f'(x)$.

——————————

Answer(s) submitted:

- 6-(2/(x^2))

(correct)
Correct Answers:

- 6 - 2/x^2

Problem 5. 5. (1 pt) If $f(x) = 9\sqrt{x}(x-5)$, find $f'(x)$.
$f'(x) = $ ——————————

Answer(s) submitted:

- (9(3x-5))/(2sqrt(x))

(correct)
Correct Answers:

- (9)*(3/2)*(x**(1/2)) - (9)*(5/2)*(x**(-1/2))

Problem 6. 19. (1 pt) Let
$$f(x) = -5\csc(3x)$$
$f'(x) = $ ——————————

Answer(s) submitted:

- 15cot(3x)csc(3x)

(correct)
Correct Answers:

- 5*3/(tan(3*x)*sin(3*x))

Problem 7. 1. (1 pt)
Differentiate the following function:
$$V(r) = \frac{4}{3}\pi r^3$$
$V'(r) = $ ————
Answer(s) submitted:

- 4(pi)(r^2)

(correct)
Correct Answers:

- (4* pi* r^2)

Problem 8. 18. (1 pt) Let $f(x) = 3\cos(3x - 5)$. Find $f'(x)$.
$f'(x) = $ ——————————
Answer(s) submitted:

- 9sin(5-3x)

(correct)
Correct Answers:

- -3*3*sin(3*x-5)

Problem 9. 16. (1 pt) Let $f(x) = -9\cos^3 x$.

$f'(x) = $ ——————————
Answer(s) submitted:

- 27sin(x) (cos(x))^2

(correct)
Correct Answers:

- - -9*3*(cos(x))^(3 - 1)*sin(x)

Problem 10. 2. (1 pt) If $f(t) = 4t^{-3/4}$, find $f'(t)$.
$f'(t) =$ _____

Problem 11. 21. (1 pt) If $f(x) = 7x^2 - 2x - 32$, find $f'(x)$.

_____

Problem 12. 24. (1 pt) If $f(x) = 6 + \frac{5}{x} + \frac{6}{x^2}$, find $f'(x)$.

_____

Problem 13. 11. (1 pt) Let

$$f(x) = \frac{-6x}{\sqrt{8-2x}}$$

$f'(x) =$ _____

Problem 14. 7. (1 pt) Let $f(x) = (3x - 6x^3)(6 + \sqrt{x})$. Find $f'(x)$.
$f'(x) =$ _____

Problem 15. 26. (1 pt) If $y = 8\pi^6$, find y'.

_____

Problem 16. 17. (1 pt) If $f(x) = \cos x - 7\tan x$, then
$f'(x) =$ _____

Problem 17. 23. (1 pt)

Let $f(x) = -2x^6\sqrt{x} + \frac{-6}{x^2\sqrt{x}}$.

$f'(x) =$ _____

[NOTE: Your answer should be a function in terms of the variable 'x' and not a number!]

Problem 18. 31. (1 pt) If $f(x) = (x - 9)(2x + 5)$, then

$f'(x) =$ _____

Problem 19. 30. (1 pt) If $f(t) = \frac{\sin t}{4} + \frac{7}{t}$, then

$f'(t) =$ _____

- `cos(t)/4-7/t^2`

Problem 20. 4. (1 pt) If $f(x) = \frac{6x^2+5x+38}{\sqrt{x}}$, find $f'(x)$.

$f'(x) =$ _____

Answer(s) submitted:

- `(((18x^2)+(5x)-(38))/(2(x^(3/2))))`

(correct)
Correct Answers:

- `(6)*(3/2)*(x**(1/2)) + (5/2)*(x**(-1/2)) -(38/2)*(x**(-3/2))`

Problem 21. 13. (1 pt) Let

$$y = (6+\cos^2 x)^{13}$$

$\frac{dy}{dx} =$ _____

Answer(s) submitted:

- `-26sin(x)cos(x) ((cos(x))^2 + 6)^12`

(correct)
Correct Answers:

- `-2*cos(x)*sin(x)*13*(6+(cos(x))^2)^(13-1)`

Problem 22. 14. (1 pt) If $f(t) = (t^2+3t+2)(4t^{-2}+4t^{-3})$, find $f'(t)$.

Answer: _____

Answer(s) submitted:

- `-((8(t+1)(2t+3))/(t^4))`

(correct)
Correct Answers:

- `(2*t+3)*(4*t^(-2) +4*t^(-3)) + (t^2 + 3*t+2)*(-2*4*t^(-3)-3*4*t^(-4))`

Problem 23. 15. (1 pt) Let

$$f(x) = (7x^2+6)^6(-7x^2+3)^{14}$$

$f'(x) =$ _____

Answer(s) submitted:

- `(28x)((7x^2 - 3)^13)((7x^2 + 6)^5)(70x^2 + 33)`

(correct)
Correct Answers:

- `(7*x^2+6)^5 * (-7*x^2+3)^13 * (-1960*x^3 + -924*x)`

Problem 24. 22. (1 pt)

Let $f(x) = \frac{6}{7x+6}$.

$f'(x) =$ _____

Answer(s) submitted:

- `-((42)/((7x + 6)^2))`

(correct)
Correct Answers:

- `-6*7/(7*x +6)**2`

Problem 25. 3. (1 pt) If $f(t) = 4\sqrt{t} + \frac{8}{\sqrt{t}}$, find $f'(t)$.

$f'(t) =$ _____

Answer(s) submitted:

- `((2(t-2))/(t^(3/2)))`

(correct)
Correct Answers:

- `(4/2)*(t**(-1/2)) - (1/2)*(8)*(t**(-3/2))`

Problem 26. 6. (1 pt) If $f(t) = \sqrt[3]{t^2} + 2\sqrt{t^3}$, find $f'(t)$.

$f'(t) =$ _____

Answer(s) submitted:

- `((9sqrt(t^3))+(2(t^2)^(1/3)))/(3t))`

(incorrect)
Correct Answers:

- `(2/3)*(t^(-1/3)) + (3)*(t**(1/2))`

Problem 27. 12. (1 pt) Let

$$y = \sqrt{4+7\tan x}$$

$\frac{dy}{dx} =$ _____

Answer(s) submitted:

- `(7(sec(x))^2) / (2sqrt(7tan(x) + 4))`

(correct)
Correct Answers:

- `7/2*(sec(x))^2*(4+7*tan(x))^(-.5)`

Problem 28. 10. (1 pt) If $f(t) = (8t - \frac{4}{t})^{\frac{4}{7}}$, find $f'(t)$.

_____

Answer(s) submitted:

- `((4((4/(t^2))+8)) / (7(8t - (4/t))^(3/7)))`

(correct)
Correct Answers:

- `4/7*(8*t-4/t)**(4/7-1)*(8+4/(t**2))`

Problem 29. 32. (1 pt) Find dy/dx by implicit differentation:

$$5+6x = \sin(xy^5)$$

_____

Answer(s) submitted:

- `-(((y^5)-(6sec(x(y^5)))) / (5x(y^4)))`

(correct)
Correct Answers:

- `y*(y**(-5)*6-cos(x*y**5))/(5*x*cos(x*y**5))`

Problem 30. 9. (1 pt) Differentiate
$$f(x) = \tan x (7 \sin x + 5 \cos x).$$

$f'(x) =$ _____

Answer(s) submitted:

- (sin(x)(7 - 5tan(x))) + ((7tan(x) + 5)sec(x))

(correct)

Correct Answers:

- (sec(x))^{2}*(7*sin(x) + 5*cos(x)) + tan(x)*(7*cos(x) - 5*sin(x))

Problem 31. 8. (1 pt) Find the derivative of $f(x) = x^8 \cos x$
$f'(x) =$ _____
SOLUTION:

SOLUTION
Using the product rule,

$$f'(x) = 8x^7 \cos(x) - x^8 \sin(x)$$

Answer(s) submitted:

- (x^7)(8cos(x) - xsin(x))

(correct)

Correct Answers:

- 8*x^(8-1)*cos(x) - x^(8)*sin(x)

Problem 32. 20. (1 pt) Let
$$f(x) = -9 \cos(\cos x)$$
$f'(x) =$ _____

Answer(s) submitted:

- -9 sin(x) sin(cos(x))

(correct)

Correct Answers:

- -9*sin(cos(x))*sin(x)