**1.** (1 pt) Let

$$f(x) = -2\ln(6x)$$

$f'(x) =$ _____
$f'(5) =$ _____
*Answer(s) submitted:*

- -2/x
- -2/5

(correct)
*Correct Answers:*

- -2/x
- -0.4

**2.** (1 pt) Let

$$f(x) = (\ln x)^5$$

$f'(x) =$ _____
$f'(e^3) =$ _____
*Answer(s) submitted:*

- (5ln^4(x)) / x
- 405/((e^3))

(correct)
*Correct Answers:*

- 5 / x *(ln(x))^(5 - 1)
- 20.1637626992003

**3.** (1 pt) Let

$$f(x) = -2x^2 \ln x$$

$f'(x) =$ _____
$f'(e^2) =$ _____
*Answer(s) submitted:*

- -2(x+2xln(x))
- -10(e^2)

(correct)
*Correct Answers:*

- -2*x^(2-1)*(2*ln(x)+ 1)
- -73.8905609643502

**4.** (1 pt) Evaluate $\frac{d}{dx}\ln((x+6)^8)$.

$\frac{d}{dx}\ln((x+6)^8)$ = _____

*Answer(s) submitted:*

- 8/(x+6)

(correct)
*Correct Answers:*

- 8/(x + 6)

**5.** (1 pt) Evaluate $\frac{d}{dt}\ln(4t^2+10t+8)$.

$\frac{d}{dt}\ln(4t^2+10t+8)$ = _____

*Answer(s) submitted:*

- (4t+5)/(2t^2 + 5t + 4)

(correct)
*Correct Answers:*

- (2*4*t + 10)/(4*t**2 + 10*t + 8)

**6.** (1 pt) Suppose that

$$f(x) = \frac{5}{\ln(x^2+3)}.$$

Find $f'(1)$.

$f'(1)$ = _____

*Answer(s) submitted:*

- -5/(2ln^2(4))

(correct)
*Correct Answers:*

- -1.3008556131285

**7.** (1 pt) Evaluate $\frac{d}{dx}\sqrt[5]{\ln(8-x^2)}$ at $x = 1$.

$\frac{d}{dx}\sqrt[5]{\ln(8-x^2)}$ at $x = 1$ = _____

*Answer(s) submitted:*

- -2/(35ln^(4/5)(7))

(correct)
*Correct Answers:*

- -0.0335477752448494

**8.** (1 pt) Let

$$f(x) = 9^x \log_7(x)$$

$f'(x) =$ _____

Hint: In WeBWorK, you must use $\frac{\ln(x)}{\ln(b)}$ for $\log_b(x)$.
*Answer(s) submitted:*

- ((9^x)(xln(9)ln(x) + 1))/(xln(7))

(correct)
*Correct Answers:*

- 9^x*(ln(9)*ln(x)/ln(7)+1/x/ln(7))

**9.** (1 pt) Suppose that

$$f(x) = \log_5(3x^2+1).$$

Find $f'(2)$.

$f'(2)$ = _____

*Answer(s) submitted:*

- `0.57354`

(correct)

*Correct Answers:*

- `0.573539939593488`

**10.** (1 pt) If $f(x) = 4\cos(8\ln(x))$, find $f'(x)$.

_____

Find $f'(5)$.

_____

*Answer(s) submitted:*

- `(-32sin(8ln(x)))/x`
- `-1.94709`

(correct)

*Correct Answers:*

- `-4*sin(8*ln(x))*8/x`
- `-1.94708831185372`

**11.** (1 pt) Let

$$f(x) = 2\ln[\sin(x)]$$

$f''(x)$ = _____

*Answer(s) submitted:*

- `-2csc^2(x)`

(correct)

*Correct Answers:*

- `- 2/(sin(x))**2`

**12.** (1 pt) Let

$$f(x) = \ln\sqrt{\frac{6x+6}{3x-7}}$$

$f'(x)$ = _____

*Answer(s) submitted:*

- `5/(-3x^2 + 4x + 7)`

(correct)

*Correct Answers:*

- `(6/(6*x + 6) - 3/(3*x + -7))/2`

**13.** (1 pt) If $f(x) = e^3 + \ln(2)$, then $f'(x)$ = _____

*Answer(s) submitted:*

- `0`

(correct)

*Correct Answers:*

- `0`

**14.** (1 pt) Find the derivative of the function

$$g(x) = (2x^2+4x+3)e^x$$

$g'(x)$ = _____

*Answer(s) submitted:*

- `(e^x)(2x^2 + 8x + 7)`

(correct)

*Correct Answers:*

- `(2*x^2 + (2*2 + 4)*x + 4 + 3)*e^x`

**15.** (1 pt) Suppose that

$$f(x) = \frac{e^x}{x^2+7}.$$

Find $f'(1)$.

$f'(1)$ = _____

*Answer(s) submitted:*

- `(3e)/32`

(correct)

*Correct Answers:*

- `0.254838921418035`

**16.** (1 pt) Suppose that $f(x) = 9e^x - ex^e$. Find $f'(3)$.

$f'(3)$ = _____

*Answer(s) submitted:*

- `((-1/3)((3^e) - 27e)(e^2))`

(correct)

*Correct Answers:*

- `131.970065607213`

**17.** (1 pt) Let

$$f(x) = \ln[x^5(x+5)^3(x^2+7)^3]$$

$f'(x)$ = _____

*Answer(s) submitted:*

- `((14x^3)+(55x^2)+(56x)+(175))/(x(x+5)(x^2 + 7))`

(correct)

*Correct Answers:*

- `5/x +3/(x+5)+2*x*3/(x**2+7)`

**18.** (1 pt) If $f(x) = e^{\sqrt{3x+5}}$, find $f'(x)$.

*Answer(s) submitted:*

- `(3e^(sqrt(3x+5)))/(2sqrt(3x+5))`

(correct)

*Correct Answers:*

- `(0.5*(3*x+5)**(-0.5))*3*exp(sqrt(3*x +5))`

**19.** (1 pt) Let

$$y = 10^{-6/x}$$

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

*Answer(s) submitted:*

- `(3*(2^((x-6)/x)) * (5^(-6/x))ln(10)) / (x^2)`

(correct)

*Correct Answers:*

- `6*ln(10)/x^2*10^(-6/x)`

**20.** (1 pt) Let

$$y = \frac{e^{5x}}{7+e^x}$$

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

*Answer(s) submitted:*

- `((e^(5x))((4e^x) + 35))/(((e^x)+7)^2)`

(correct)

*Correct Answers:*

- `(5*7*exp(5*x)+(5-1)*exp((5+1)*x))/(7+e^x)^2`

**21.** (1 pt) Let

$$f(x) = 5e^{x\cos x}$$

$f'(x) =$ _____

*Answer(s) submitted:*

- `5e^(xcos(x)) (cos(x) - xsin(x))`

(correct)

*Correct Answers:*

- `5*2.71828182845905^(x*cos(x))*(cos(x) - x*sin(x))`

**22.** (1 pt) If $y = 7x\ln(x)$, find the following.

$y' =$ _____

$y'' =$ _____

*Answer(s) submitted:*

- `7(ln(x) + 1)`
- `7/x`

(correct)

*Correct Answers:*

- `7*ln(x)+7`
- `7/x`

**23.** (1 pt) Let

$$f(x) = 7\ln(\sec(x) + \tan(x))$$

$f''(x) =$ _____

HINT: Simplify the first derivative before you find the second derivative.

*Answer(s) submitted:*

- `7tan(x)sec(x)`

(correct)

*Correct Answers:*

- `7*sec(x)*tan(x)`

**24.** (1 pt) Use logarithmic differentiation to find $f'(x)$ if

$$f(x) = (6x-4)^2 \cdot (7x^2+9)^5.$$

$f'(x) =$ _____

*Answer(s) submitted:*

- `8(3x-2)(((7x^2)+9)^4)(126x^2 - 70x + 27)`

(correct)

*Correct Answers:*

- `((6*x- 4)**2*(7*x**2+ 9)**5)*(2*6/(6*x-4)+5*2*7*x/(7*x**2+`

**25.** (1 pt) Find $\frac{dy}{dx}$ for the function $y = x^{\cos(x)}$.

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

*Answer(s) submitted:*

- `(x^(cos(x) - 1))(cos(x) - xln(x)sin(x))`

(correct)

*Correct Answers:*

- `x^(cos(x))*(cos(x)/x - sin(x)*ln(x))`

**26.** (1 pt) Let

$$f(x) = x^{7x}$$

Use logarithmic differentiation to determine the derivative.

$f'(x) =$ _____

$f'(1) =$ _____

*Answer(s) submitted:*

- `(7x^(7x))(ln(x) + 1)`
- `7`

(correct)

*Correct Answers:*

- `7*x**(7*x)*(ln(x)+1)`
- `7`