Derivadas Logaritmicas 05/06/22

14. $f(x) = \frac{\ln x^2}{x}$

$$f' = \frac{\frac{d}{dx}(\ln(x^2))(x) - \ln(x^2)(1)}{x^2}$$

$$f' = \frac{\frac{1}{x^2}(2x)(x) - \ln(x^2)(1)}{x^2}$$

$$f' = \frac{2 - \ln(x^2)}{x^2}$$

16. $f(x) = \ln(x^2\sqrt{3x^2-1})$

$$f' = \frac{1}{x^2\sqrt{3x^2-1}}(2x\sqrt{3x^2-1} + x^2)\left(\frac{1}{2\sqrt{3x^2-1}}\right)(3)(2x)$$

$$f' = \frac{1}{x^2\sqrt{3x^2-1}}(2x\sqrt{3x^2-1} + x^2)\left(\frac{1}{2\sqrt{3x^2-1}}\right)(3)(2x)$$

$$f' = \frac{9x^2 - 2}{3x^3 - x}$$

19. $y = \ln\sqrt{\frac{cx-b}{cx+b}}$

$y = \frac{1}{2}(\ln(cx-b) - \ln(cx+b))$

$y = \frac{1}{2}(\ln(cx-b)) - \frac{1}{2}(\ln(cx+b))$

23. $y = \ln\sqrt{3x+4}$

$y = \ln 3x+4^{1/2}$

$y = \frac{1}{2}(\ln(3x+4))$

24. $y = \ln\left[\frac{2x-3}{2x+3}\right]$

$y = \ln(2x-3) - \ln(2x+3)$

Derivadas Exponenciales

55. $f(x) = e^{3x} - 1$

$y = e^{3x} - 1$ $\quad 3y + 1 = \ln(x)$

$x = e^{3y} - 1$ $\quad 3y = \ln(x) + 1$

$e^{3y} - 1 = x$ $\quad y = \frac{1}{3}(\ln(x) + \frac{1}{3})$

57. $f(t) = \sqrt[3]{e^t}$

$f'(t) = \frac{d}{dt}(\sqrt[3]{e^t})$

$f(t) = \frac{d}{dt}(e^{\frac{t}{3}})$

$f'(t) = \frac{d}{dy}(e^y)(\frac{d}{dt}(\frac{t}{3}))$ $\quad f'(t) = \frac{e^{\frac{t}{3}}}{3}$

$f'(t) = e^y(\frac{1}{3})$

$f'(t) = e^{\frac{t}{3}}(\frac{1}{3})$

59. $F(x) = e^{\frac{1}{x^2}}$

$F'(x) = \frac{d}{dx}\left(e^{\frac{1}{x^2}}\right)$

$f'(x) = \frac{d}{dy}(e^y)\left(\frac{d}{dx}\left(\frac{1}{x^2}\right)\right)$

$f'(x) = e^y\left(-\frac{2x}{(x^2)^2}\right)$

$f'(x) = e^{\frac{1}{x^2}}\left(-\frac{2x}{(x^2)^2}\right)$

$f'(x) = -\frac{2e^{\frac{1}{x^2}}}{x^3}$

61. $f(\theta) = e^{\operatorname{sen}^2\theta}$

$f'(\theta) = \frac{d}{d\theta}\left(e^{\operatorname{sen}^2\theta}\right)$

$f'(\theta) = \frac{d}{d_g}(e^2)\left(\frac{d}{d\theta}(\operatorname{sen}\theta^2)\right)$

$f'(\theta) = e^2(2\operatorname{sen}\theta\cos\theta)$

$f'(\theta) = e^{(\operatorname{sen}\theta^2)}(\operatorname{sen} 2\theta)$

63. $y = e^{x\operatorname{sen}x}$

$y' = \frac{d}{dx}(e^{x\operatorname{sen}x})$

$y' = \frac{d}{d_g}(e^2)\left(\frac{d}{dx}(x\operatorname{sen}x)\right)$

$y' = e^2(\operatorname{sen}x + x(\cos x))$

$y' = e^{x\operatorname{sen}x}(\operatorname{sen}x + x(\cos x))$

$y' = e^{x\operatorname{sen}x}(\operatorname{sen}x + xe^{x(\operatorname{sen}x)})(\cos x)$