

Lista - Atividade Derivadas da Função Composta e Regra da Cadeia

Nome: _____

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01- Calcule a derivada das funções compostas através da regra da cadeia.

a) $y = (x^2 + 1)^7$

b) $f(x) = \sqrt{x^2 + 1}$

c) $y = \sqrt{5x + 2}$

d) $y = \sqrt[3]{\sqrt{2x^2 - x}}$

e) $y = (2x + 1)^3$

f) $y = \sqrt{7x + 3}$

g) $y = \left(\frac{x}{1-3x}\right)^5$

h) $f(x) = (2x - 7)^3$

i) $f(x) = (25 + x^2)^{-\frac{1}{2}}$

j) $g(x) = 3(9x - 4)^4$

02- Calcule as derivadas das funções Exponenciais:

a) $y = 12^x$

b) $f(x) = \left(\frac{2}{5}\right)^x$

c) $f(x) = -4e^x$

d) $y = (7 \cdot 10^x)$

e) $y = e^{(3x^2 - 4)}$

f) $f(x) = 2^{(5x-3x^2)}$

g) $y = \frac{1^{\sqrt{6x}}}{3}$

h) $y = e^{\frac{x+1}{x-1}}$

i) $y = 6e^{\sqrt{x}}$

j) $y = 3^{2x^2+3x-1}$

03- Calcule as derivadas das funções Logarítmicas:

A) $y = \log_2 3x$

B) $y = \ln(x^2 + 1)$

C) $y = \log_6 x$

D) $y = \log_4 5x$

E) $y = \ln(x^3 - 4)$

F) $y = \sqrt{\ln x}$

G) $y = \ln 12$

H) $y = \log_5 (2x^3)$

I) $y = \log_3(x^2 + 3x + 4)$

J) $y = \log_{10}(x^3 + 1)$

K) $f(x) = \log_3(x^2 - 5)$

Gabarito

01-

$$a) \frac{dy}{dx} = 14x(x^2 + 1)^6$$

$$b) \frac{dy}{dx} = \frac{x}{\sqrt{x^2+1}}$$

$$c) \frac{dy}{dx} = \frac{5}{2\sqrt{5x+2}}$$

$$d) \frac{dy}{dx} = \frac{4x-1}{6(2x^2-x)^{\frac{7}{5}}}$$

$$e) \frac{dy}{dx} = 6(2x + 1)^2$$

$$f) \frac{dy}{dx} = \frac{7}{2\sqrt{7x+3}}$$

$$g) \frac{dy}{dx} = \frac{5x^4}{(1-3x)^6}$$

$$h) \frac{dy}{dx} = 6(2x - 7)^2$$

$$i) \frac{dy}{dx} = -\frac{x}{(25+x^2)^{\frac{3}{2}}}$$

$$j) \frac{dy}{dx} = 108(9x - 4)^3$$

02-

$$y' = 12^x \cdot \ln(12)$$

$$y' = \left(\frac{2}{5}\right)^x \cdot \ln \frac{2}{5}$$

$$y' = -4e^x$$

$$y' = 7 \ln(10) \cdot 10^x$$

$$y' = 6x \cdot e^{(3x^2-4)}$$

$$y' = 2^{(5x-3x^2)} \cdot \ln(2) \cdot (5 - 6x)$$

$$y' = \frac{1^{\sqrt{6x}}}{3} \cdot \ln \frac{1}{3} \cdot \frac{1}{2\sqrt{6x}}$$

$$y' = \frac{-2e^{\frac{x+1}{x-1}}}{(x-1)^2}$$

$$y' = \frac{3e^{\sqrt{x}}}{\sqrt{x}}$$

03-

$$d)y' = \frac{1}{x \cdot \ln(4)}$$

$$h)y' = \frac{3}{x \cdot \ln(5)}$$

$$a)y' = \frac{1}{x \cdot \ln(2)}$$

$$e)y' = \frac{3x^2}{x^3-4}$$

$$i)y' = \frac{(2x+3)}{(x^2+3x+4) \cdot \ln(3)}$$

$$b)y' = \frac{2x}{x^2} + 1$$

$$f)y' = \frac{1}{2x\sqrt{\ln(x)}}$$

$$j)y' = \frac{3x^2}{(x^3+1) \cdot \ln(10)}$$

$$c)y' = \frac{1}{x \cdot \ln(6)}$$

$$g)y' = \frac{1}{12}$$

$$k)y' = \frac{2x}{(x^2-5) \cdot \ln(3)}$$