**Material de apoio - Exercícios – Derivadas - Respostas**

a ) Respostas

$f'(x) = 0$ $f'(x) = 3$ $f'(x) = \frac{1}{3}$ $f'(x) = 2x$ $f(x) = x^6$ $f'(x) = -\frac{1}{x^2}$

$f'(x) = -\frac{3}{x^4}$ $f'(x) = 1$ $f'(x) = 100x^{99}$ $f'(x) = -3x^{-4}$ $g'(x) = 12$ $g'(x) = -5$

$g'(x) = \frac{9}{x^2}$ $g'(x) = 3x$ $g'(x) = 0$ $g'(x) = 0$ $g'(x) = 9$ $g'(x) = -13x^{-14}$

$g'(x) = 8x$ $g'(x) = -x^{-6}$ $g'(x) = 3^x \ln 3$ $g'(x) = 4^x \ln 4$ $g'(x) = 100^x \ln 100$

$g'(x) = \frac{1}{10}.10^x \ln 10$ $g'(x) = e^x$ $f'(x) = 88x^{10}$ $f'(x) = -7x^2$

$f'(x) = 1 + 6x$ $f'(x) = 10x + 5x^4$ $f'(x) = 3x^2 + 2x + 1$

$f'(x) = 2nx^{n-1}$ $f'(x) = 8x + \cos x$ $f'(x) = 3x^2 - 6x + 3$

$f'(x) = -1 + \cos x + \operatorname{sen} x$ $f'(x) = a - 4x^3$ $f'(x) = 32x^3 - 3^x \ln 3$

$f'(x) = -\operatorname{sen} x - e^x$ $f'(x) = 3x^2 - 4^x \ln 4$ $f'(x) = 20x^3 - 9$

$f'(x) = 5^x \ln 5 + e^x + \cos x$

b ) Respostas

$f'(x) = \frac{3x^2\sqrt{x^3+2}}{2x^3+4}$ $f'(x) = \frac{(2x+1)\sqrt[3]{x^2+x+1}}{3x^2+3x+3}$

$f'(x) = (-2x-1)\operatorname{sen}(x^2+x)$ $f'(x) = 2x\cos(x^2)$

$f'(x) = \cot g(x)$ $f'(x) = 18x(3x^2+1)^2$

$f'(x) = -3\operatorname{sen}(3x)$ $f'(x) = \frac{2x}{x^2+3}$

$f'(x) = 3e^{3x}$ $f'(x) = \cos(x).e^{\operatorname{sen} x}$

$g'(x) = -\operatorname{sen}(x).\cos(\cos x)$ $g'(x) = -e^x\operatorname{sen}(e^x)$

$g'(x) = -5e^{-5x}$ $g'(x) = \sec(x).e^{tg(x)}$

$g'(t) = 8t(t^2+3)^3$ $g'(x) = 3\sec(3x).tg(3x)$

$g'(x) = -2x\operatorname{cossec}^2(x^2)$ $g'(x) = -2\operatorname{cossec}(2x)\cot g(2x)$

$g'(x) = \sec^2(x).\sec(tgx).tg(tgx)$ $g'(x) = \frac{(e^x - e^{-x})\sqrt{e^x+e^{-x}}}{2e^x+2e^{-x}}$

c ) Respostas

$g'(x) = 15x^4 + 4x^3 + 9x^2 + 8x + 1$ $g'(x) = a\cos x - b\operatorname{sen} x \quad (a,b \in \Re)$

$g'(x) = x^2(9x^6 + 7x^4 + 12x^3 + 4x + 3)$ $g'(x) = e^x(\cos x + x\cos x - x\operatorname{sen} x)$

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

$g'(x) = e^x(x+1) - \operatorname{sen} x$ $g'(x) = e^x.(\operatorname{sen} x . \cos x + \cos 2x)$

$g'(x) = x^3a^x(4 + x\ln x)$ $g'(x) = 5xe^x(2+x)$

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$$f'(x) = -\frac{14}{x^8}$$

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

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

$$f'(x) = \frac{23}{(3x+2)^2}$$

$$f'(x) = \frac{-27x^2+12x+70}{(2-9x)^2}$$

$$f'(x) = \frac{6x^2}{(x^3+1)^2}$$

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

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

$$f'(x) = \frac{6x+2}{7}$$

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

d ) Respostas

$$g'(x) = 2.3^{2x}\ln 3 + 3$$

$$g'(x) = -2xe^{-x^2} + \frac{2}{2x+1}$$

$$g'(x) = -e^{-x} + 2e^{-2x}$$

$$g'(x) = 2x.2^{x^2}.\ln 2 + 2.3^{2x}.\ln 3$$

$$g'(x) = -\operatorname{sen} x.(3+\cos x)^x.\ln(3+\cos x)$$

$$f'(x) = (10^x + 10^{-x})\ln 10$$

$$f'(x) = \frac{1}{4}[\operatorname{sen}(6x) + \operatorname{sen}(4x) + \operatorname{sen}(2x) + 1]$$

$$f'(x) = -\operatorname{sen}(x).e^{\cos x} - e^x\operatorname{sen}(e^x)$$

$$f'(x) = e^{3x}(1+3x)$$

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

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

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

$$f'(x) = (x+2)^7(x+3)^5(14x+36)$$

$$f'(x) = \frac{21x\sqrt[4]{(x+1)^3}}{4x+4}$$

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

$$f'(x) = \frac{3\operatorname{sen}^2(x)\cos^2(x) - \operatorname{sen}^4(x)}{4}$$

$$f'(x) = \frac{3}{8}[\cos^2(x) - \operatorname{sen}^2(x)]$$

$$f'(x) = \operatorname{sen}^4 x$$

$$f'(x) = -2\operatorname{sen}(x) + 2\operatorname{sen}^3(x)$$

$$f'(x) = \operatorname{sen}^5 x$$