LISTA EXERCÍCIOS - DERIVADAS

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Assunto referente: Diferenciabilidade de função de uma variável

P.346 $y = \dfrac{a + \sqrt{x}}{a - \sqrt{x}}$

P.347 $F(r) = \sqrt{\dfrac{1 + r}{1 - r}}$

P.348 $y = \sqrt{\dfrac{1 + x^2}{1 - x^2}}$

P.349 $y = \sqrt{4 + \dfrac{1}{x}}$

P.350 $y = \sqrt{\dfrac{x^2 - 5}{10 - x^2}}$

P.351 $y = \dfrac{1}{t - \dfrac{1}{t}}$

P.352 $y = \sqrt{\left(\dfrac{1 - x}{1 + x}\right)^2}$

P.353 $y = \sqrt{1 + \sqrt{x}}$

P.354 $y = \dfrac{2t^2 - 1}{3t^3} \cdot \sqrt{t^2 + 1}$

P.355 $y = \dfrac{\sqrt{a - x} + \sqrt{a + x}}{\sqrt{a - x} - \sqrt{a + x}}$

P.356 $f(x) = \text{cotg } x$

P.357 $f(x) = \sec x$

P.358 $f(x) = \text{cossec } x$

P.359 $y = 5 \operatorname{sen} x + 3 \cos x$

P.360 $y = \text{tg } x - \text{cotg } x$

P.361 $y = \dfrac{\operatorname{sen} x + \cos x}{\operatorname{sen} x - \cos x}$

P.362 $y = 2t \cdot \operatorname{sen} t - (t^2 - 2) \cos t$

P.363 $y = x \cdot \text{cotg } x$

P.364 $y = \dfrac{\operatorname{sen} x}{x}$

P.365 $y = 2 \cdot \cos^3 x$

P.366 $y = 5 \cdot \text{tg}^4 x$

P.367 $y = \operatorname{sen}^3 x$

P.368 $y = \operatorname{sen} (x^3)$

P.369 $y = 2 \cdot \operatorname{sen} (x - 2)$

P.370 $y = \operatorname{sen} 3x$

P.371 $y = \operatorname{sen} x^3$

P.372 $y = \cos 2x$

P.373 $y = 2 \cdot \cos (2x - 1)$

P.374 $y = \sqrt{\operatorname{sen} x}$

P.375 $y = \operatorname{sen} \sqrt{x}$

P.376 $y = 3 \cdot \text{tg } 2x$

P.377 $y = \text{tg } (2x^2 - x + 3)$

P.378 $y = \operatorname{sen}^4 2x$

P.379 $y = \cos^3 2x$

P.380 $y = \operatorname{sen} (\cos x)$

P.381 $y = \text{tg } (\operatorname{sen} x)$

P.382 $y = \dfrac{\operatorname{sen} 2x}{1 + \cos 2x}$

P.383 $y = a^{3x}$

P.384 $y = e^{2x}$

P.385 $y = e^x - e^{-x}$

P.386 $y = 2^{\text{tg } x}$

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P.387 $y = 3^{\operatorname{sen} x + \cos x}$

P.388 $y = x^2 \cdot e^{ax}$

P.389 $y = x^n \cdot a^x$

P.390 $y = \log_e \sqrt{1 - x^2}$

P.391 $y = \log_e (x^2 + a)$

P.392 $y = \log_e (ax + b)$

P.393 $y = x \log_e x$

P.394 $y = \log_e \frac{a + x}{a - x}$

P.395 $y = \log_e (x + \sqrt{1 + x^2})$

P.396 $P(y) = \log_e \sqrt{\frac{1 + y}{1 - y}}$

P.397 $y = \log_e \frac{\sqrt{x^2 + 1} - x}{\sqrt{x^2 + 1} + x}$

P.398 $y = \log_e (\log_e x)$

P.399 $y = x^7 \cdot \log_e x$

P.400 $y = (x - 1) \cdot \log_e x$

P.401 $y = \frac{\log_e x}{x^2}$

P.402 $y = \frac{1}{x} + 2 \log_e x - \frac{\log_e x}{x}$

P.403 $y = x^3 \log_e x - \frac{x^3}{3}$

P.404 $y = \frac{\log_a x^2}{\log_a e} - \log_e x$

P.405 $f(t) = \log_e \cos t$

P.406 $y = \log_e \operatorname{tg} x$

P.407 $y = \log_e \operatorname{tg} \left(\frac{\pi}{4} + \frac{x}{2} \right)$

P.408 $y = \log_e \frac{1 + \operatorname{tg} \frac{x}{2}}{1 - \operatorname{tg} \frac{x}{2}}$

P.409 $y = (\log_e x) \cdot \cos x$

P.410 $y = \frac{\log_e x}{e^x}$

P.411 $y = \operatorname{arc\ sen} \frac{x}{a}$

P.412 $y = \operatorname{arc\ tg} \frac{2x}{1 - x^2}$

P.413 $y = \operatorname{arc\ tg} x + \operatorname{arc\ cotg} x$

P.414 $y = x \cdot \operatorname{arc\ sen} x$

P.415 $y = \frac{(1 + x^2) \operatorname{arc\ tg} x - x}{2}$

P.416 $y = \operatorname{arc\ tg} \frac{x + a}{1 - ax}$

P.417 $y = \operatorname{arc\ cos} \sqrt{\frac{1 + \cos x}{2}}$

P.418 $y = x\sqrt{a^2 - x^2} + a^2 \operatorname{arc\ sen} \frac{x}{a}$

P.419 $y = x^x$

P.420 $y = x \cdot e^x$

P.421 $y = x^{x^x}$

P.422 $y = x^{\operatorname{tg} x}$

P.423 $y = \frac{1}{e^x + e^{-x}}$

P.424 $y = \frac{e^{ax}(a \cdot \cos bx + b \cdot \operatorname{sen} bx)}{a^2 + b^2}$

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RESPOSTAS

P.346 $y' = \dfrac{a}{\sqrt{x}(a - \sqrt{x})^2}$

P.347 $F'(r) = \dfrac{1}{(1 - r)\sqrt{1 - r^2}}$

P.348 $y' = \dfrac{2x}{(1 - x^2)\sqrt{1 - x^4}}$

P.349 $y' = -\dfrac{1}{2\sqrt{x^3(4x + 1)}}$

P.350 $y' = \dfrac{5x}{\sqrt{(10 - x^2)^3(x^2 - 5)}}$

P.351 $y' = -\dfrac{t^2 + 1}{(t^2 - 1)^2}$

P.352
$y' = \dfrac{-2}{(1 + x)^2}$ para $-1 < x < 1$

$y' = \dfrac{2}{(1 + x)^2}$ para $x < -1$ ou $x > 1$

P.353 $y' = \dfrac{1}{4\sqrt{x + x\sqrt{x}}}$

P.354 $y' = \dfrac{1}{t^4\sqrt{t^2 + 1}}$

P.355 $y' = \dfrac{1}{\sqrt{a^2 - x^2} \cdot (a^2 - \sqrt{a^2 - x^2})}$

P.356 $f'(x) = -\operatorname{cossec}^2 x$

P.357 $f'(x) = \sec x \cdot \operatorname{tg} x$

P.358 $f'(x) = -\operatorname{cossec} x \quad \operatorname{cotg} x$

P.359 $y' = 5 \cdot \cos x - 3 \cdot \operatorname{sen} x$

P.360 $y' = \sec^2 x + \operatorname{cossec}^2 x$

P.361 $y' = \dfrac{-2}{(\operatorname{sen} x - \cos x)^2}$

P.362 $y' = t^2 \cdot \operatorname{sen} t$

P.363 $y' = \operatorname{cotg} x - x \cdot \operatorname{cossec}^2 x$

P.364 $y' = \dfrac{x \cdot \cos x - \operatorname{sen} x}{x^2}$

P.365 $y' = -6 \cdot \cos^2 x \cdot \operatorname{sen} x$

P.366 $y' = 20 \cdot \operatorname{tg}^3 x \cdot \sec^2 x$

P.367 $y' = 3 \cdot \operatorname{sen}^2 x \cdot \cos x$

P.368 $y' = 3 \cdot x^2 \cdot \cos(x^3)$

P.369 $y' = 2 \cdot \cos(x - 2)$

P.370 $y' = 3 \cdot \cos 3x$

P.371 $y' = 3x^2 \cdot \cos x^3$

P.372 $y' = -2 \cdot \operatorname{sen} 2x$

P.373 $y' = -4 \cdot \operatorname{sen}(2x - 1)$

P.374 $y' = \dfrac{\cos x}{2\sqrt{\operatorname{sen} x}}$

P.375 $y' = \dfrac{\cos\sqrt{x}}{2\sqrt{x}}$

P.376 $y' = 6 \cdot \sec^2 2x$

P.377 $y' = (4x - 1) \cdot \sec^2(2x^2 - x + 3)$

P.378 $y' = 8 \cdot \operatorname{sen}^3 2x \cdot \cos 2x$

P.379 $y' = -6 \cdot \cos^2 2x \cdot \operatorname{sen} 2x$

P.380 $y' = -\operatorname{sen} x \cdot \cos(\cos x)$

P.381 $y' = \cos x \cdot \sec^2(\operatorname{sen} x)$

P.382 $y' = \sec^2 x$

P.383 $y' = 3 \cdot a^{3x} \cdot \log_e a$

P.384 $y' = 2 \cdot e^{2x}$

P.385 $y' = e^x + e^{-x}$

P.386 $y' = 2^{\operatorname{tg} x} \cdot \sec^2 x \cdot \log_e 2$

P.387 $y' = 3^{\operatorname{sen} x + \cos x} \cdot (\cos x - \operatorname{sen} x) \cdot \log_e 3$

P.388 $y' = x \cdot e^{ax} \cdot (ax + 2)$

P.389 $y' = a^x \cdot x^{n-1} \cdot (x \cdot \log_e a + n)$

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RESPOSTAS

P.390 $y' = \frac{x}{x^2 - 1}$

P.391 $y' = \frac{2x}{x^2 + a}$

P.392 $y' = \frac{a}{ax + b}$

P.393 $y' = 1 + \log_e x$

P.394 $y' = \frac{2a}{a^2 - x^2}$

P.395 $y' = \frac{1}{\sqrt{1 + x^2}}$

P.396 $P'(y) = \frac{1}{1 - y^2}$

P.397 $y' = \frac{-2}{\sqrt{x^2 + 1}}$

P.398 $y' = \frac{1}{x \cdot \log_e x}$

P.399 $y' = x^6(7 \cdot \log_e x + 1)$

P.400 $y' = 1 - \frac{1}{x} + \log_e x$

P.401 $y' = \frac{1 - 2 \cdot \log_e x}{x^3}$

P.402 $y' = -\frac{1}{x^2} + \frac{2}{x} - \frac{1 - \log_e x}{x^2}$

P.403 $y' = 3x^2 \cdot \log_e x$

P.404 $y' = \frac{1}{x}$

P.405 $f'(t) = -\operatorname{tg} t$

P.406 $y' = \sec x \cdot \operatorname{cossec} x$

P.407 $y' = \sec x$

P.408 $y' = \sec x$

P.409 $y' = \frac{\cos x}{x} - (\log_e x) \cdot \operatorname{sen} x$

P.410 $y' = \frac{1 - x \cdot \log_e x}{x \cdot e^x}$

P.411 $y' = \frac{1}{\sqrt{a^2 - x^2}}$

P.412 $y' = \frac{2}{1 + x^2}$

P.413 $y' = 0$

P.414 $y' = \operatorname{arc\,sen} x + \frac{x}{\sqrt{1 - x^2}}$

P.415 $y' = x \cdot \operatorname{arc\,tg} x$

P.416 $y' = \frac{1}{1 + x^2}$

P.417 $y' = \frac{1}{2}$

P.418 $y' = 2\sqrt{a^2 - x^2}$

P.419 $y' = x^x \cdot (1 + \log_e x)$

P.420 $y' = e^x \cdot (1 + x)$

P.421 $y' = x^{x^x} \cdot x^x \cdot (\log_e x + \log_e^2 x + \frac{1}{x})$

P.422 $y' = x^{\operatorname{tg} x}(\sec^2 x \cdot \log_e x + \frac{\operatorname{tg} x}{x})$

P.423 $y' = \frac{e^{-x} - e^x}{(e^x + e^{-x})^2}$

P.424 $y' = e^{ax} \cdot \cos bx$

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