



Calcular as derivadas das expressões abaixo, usando as fórmulas de derivação:

a) $y = x^2 + 4x$

R: $\frac{dy}{dx} = 2x + 4$

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

R: $f'(x) = -\frac{4}{x^3}$

c) $y = \frac{x^3}{2} + \frac{3x}{2}$

R: $\frac{dy}{dx} = \frac{3}{2}(x^2 + 1)$

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

R: $\frac{dy}{dx} = \frac{1}{3\sqrt[3]{x^2}}$

e) $f(x) = \left(3x + \frac{1}{x}\right) \cdot (6x - 1)$

R: $\frac{df(x)}{dx} = 36x + \frac{1}{x^2} - 3$

f) $y = \frac{x^5}{a+b} - \frac{x^2}{a-b} - x$

R: $\frac{dy}{dx} = \frac{5x^4}{a+b} - \frac{2x}{a-b} - 1$

g) $y = \frac{(x+1)^3}{x^{3/2}}$

R: $\frac{dy}{dx} = \frac{3(x+1)^2(x-1)}{2x^{5/2}}$

h) $y = x(2x-1)(3x+2)$

R: $\frac{dy}{dx} = 2(9x^2 + x - 1)$

i) $y = \frac{2x^4}{b^2 - x^2}$

R: $\frac{dy}{dx} = \frac{4x^3(2b^2 - x^2)}{(b^2 - x^2)^2}$

j) $y = \frac{a-x}{a+x}$

R: $\frac{dy}{dx} = \frac{-2a}{(a+x)^2}$

k) $y = \left(\frac{a-x}{a+x}\right)^3$

R: $\frac{dy}{dx} = \frac{-6a(a-x)^2}{(a+x)^4}$

l) $y = \sqrt{\frac{1+x}{1-x}}$

R: $\frac{dy}{dx} = \frac{1}{(1-x)\sqrt{1-x^2}}$

m) $y = \left(1 + \sqrt[3]{x}\right)^3$

R: $\frac{dy}{dx} = \left(\frac{1}{x} + \frac{1}{x\sqrt[3]{x}}\right)^2$

n) $y = \frac{2x^2 - 1}{x\sqrt{1+x^2}}$

R: $\frac{dy}{dx} = \frac{1 + 4x^2}{x^2\sqrt{(1+x^2)^3}}$

o) $y = (x^2 - a^2)^5$

R: $\frac{dy}{dx} = 10x(x^2 - a^2)^4$