

Bilde die Ableitungen

$$f(x) = \frac{3x}{\sin(x)}$$

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

$$f(x) = \frac{x^4}{\cos(x)}$$

$$f'(x) = \frac{4x^3 \cos(x) + x^4 \sin(x)}{\cos^2(x)}$$

$$f(x) = \frac{5x+2}{x^2}$$

$$f'(x) = \frac{5x^2 - (5x+2)2x}{x^4} = \frac{-5x^2 - 4x}{x^4} = -\frac{5x+4}{x^3}$$

$$f(x) = \frac{x}{\ln(x)}$$

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

$$f(x) = \frac{e^x}{x}$$

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

$$f(x) = \frac{3x^2-4}{x^5}$$

$$f'(x) = \frac{6x^6 - (3x^2-4)5x^4}{x^{10}} = \frac{-9x^6 + 20x^4}{x^{10}} = \frac{-9x^2 + 20}{x^6}$$

$$f(x) = \frac{\sin(x)}{x}$$

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

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

$$f'(x) = \frac{15x^2 - (5x-3)6x}{9x^4} = \frac{-15x^2 + 18x}{9x^4} = \frac{-5x+6}{3x^3}$$

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

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

$$f(x) = \frac{4a}{x}$$

$$f'(x) = \frac{0 \cdot x - 4a}{x^2} = \frac{-4a}{x^2}$$