

Aufgabe - Quotientenregel

1. $f(x) = \frac{x^2}{\sin(x)}$

2. $f(x) = \frac{x^3}{e^x}$

3. $f(x) = \frac{\cos(x)}{\ln(x)}$

4. $f(x) = \frac{\sqrt{x}}{x^2}$

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



Lösung – Quotientenregel

$$1. f'(x) = \frac{x^2 \cdot \cos(x) - 2x \cdot \sin(x)}{\sin^2(x)}$$

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

$$3. f'(x) = \frac{-\sin(x) \cdot \ln(x) - \cos(x) \cdot \frac{1}{x}}{\ln^2(x)}$$

$$4. f'(x) = \frac{\frac{1}{2\sqrt{x}} \cdot x^2 - \sqrt{x} \cdot 2x}{x^4} = \frac{1 - 2x^{\frac{3}{2}}}{2x^{\frac{7}{2}}}$$

$$5. f'(x) = \frac{x \cdot \cos(x) - \sin(x)}{x^2}$$

