

## Pochodne proste

$$\begin{array}{ccccc}
 f(x) = 2 & f(x) = x^2 & f(x) = \sqrt{x} & f(x) = \frac{1}{x} & f(x) = x^2 \sqrt{x} \\
 f(x) = 3x & f(x) = x^3 & f(x) = \sqrt{x^3} & f(x) = \frac{1}{x^2} & f(x) = \frac{x^3}{\sqrt{x}} \\
 f(x) = \frac{x}{2} & f(x) = 2x^4 & f(x) = \sqrt[3]{x^2} & f(x) = \frac{1}{\sqrt{x}} & 
 \end{array}$$

## Mnożenie i dzielenie pochodnych prostych

$$f(x) = \frac{\sin x}{x^3} \quad f(x) = e^x * \operatorname{tg} x \quad f(x) = \frac{\operatorname{arctg} x}{\operatorname{tg} x} \quad f(x) = 2^x \ln x$$

## Pochodne funkcji złożonych

$$\begin{array}{cccc}
 f(x) = \sin 2x & f(x) = \ln^3 x & f(x) = 2^{\sin x + 2} & f(x) = \sqrt{e^{\sin \ln x} \operatorname{arctg} \ln x} \\
 f(x) = \sin \frac{x}{3} & f(x) = e^{2x} & f(x) = \ln \sin x & f(x) = \frac{2^{\sin^2 x}}{\operatorname{tg}^2 \sin x} \\
 f(x) = 2 \cos x^2 & f(x) = e^{x^3} & f(x) = \operatorname{tg} \sin x & f(x) = \frac{x \cdot \operatorname{arctg} 2x}{e^{\operatorname{tg} 2x}} \\
 f(x) = \sin^2 x & f(x) = e^{\sin x} & f(x) = \sqrt{\operatorname{tg} \sin x} & f(x) = x^2 \sin 3x \ln \frac{x}{4} \\
 f(x) = \sin^3(x+1)^4 & f(x) = e^{\ln x} & f(x) = \cos e^{2x} & f(x) = \operatorname{arctg}^2 \left( \frac{2xe^x}{\sin x} + 4^{x^2} \cos x^2 \right) \\
 f(x) = \sqrt{\cos x} & f(x) = e^{\operatorname{tg} x} & f(x) = \ln \operatorname{arctg} x^2 & f(x) = x^{\operatorname{tg} x} \\
 f(x) = \sqrt[3]{\sin^2 x^4} & f(x) = \sqrt{e^{\operatorname{tg} x}} & f(x) = \sqrt[3]{\ln \operatorname{arctg} x^2} & f(x) = [1 + \operatorname{tg} 2x]^{\operatorname{ctg} x} \\
 f(x) = \operatorname{tg} 2x & f(x) = e^{\operatorname{arctg} x} & f(x) = 2^{\sin \ln x} & f(x) = x^{(\sin x)^{\operatorname{tg} x}} \\
 f(x) = \operatorname{ctg}^2 x^2 & f(x) = e^{\sin^2 x} & f(x) = e^{2\operatorname{tg}^3(x^3 + e^{2x})} & \\
 f(x) = \ln 2x^3 & f(x) = e^{\ln^3 x^2} & f(x) = \operatorname{tg}^2 x \sin 2x & 
 \end{array}$$