1 Derivace

1.1 Derivace elementárních funkcí

$$y = konst \implies y' = 0 \tag{1}$$

$$y = x^n \implies y' = nx^{n-1} \tag{2}$$

$$y = e^x \implies y' = e^x \tag{3}$$

$$y = a^x \implies y' = a^x \ln a \tag{4}$$

$$y = \ln x \implies y' = \frac{1}{x} \tag{5}$$

$$y = \log_a x \implies y' = \frac{1}{x \ln a} \tag{6}$$

$$y = \sin x \implies y' = \cos x \tag{7}$$

$$y = \cos x \implies y' = -\sin x \tag{8}$$

$$y = tg(x) \implies y' = \frac{1}{\cos^2 x} \tag{9}$$

$$y = cotg(x) \implies y' = -\frac{1}{\sin^2 x} \tag{10}$$

$$y = \arcsin x \implies y' = \frac{1}{\sqrt{(1-x^2)}} \tag{11}$$

$$y = \arccos x \implies y' = -\frac{1}{\sqrt{(1-x^2)}} \tag{12}$$

$$y = \arctan x \implies y' = \frac{1}{1+x^2} \tag{13}$$

$$y = arccotg x \implies y' = -\frac{1}{1+x^2} \tag{14}$$

1.2 Základní pravidla pro počítání derivací

$$(f+g)' = f' + g' \tag{15}$$

Příklad $(x^3 + \sin(x))' = 3x^2 + \cos(x)$

$$(fg)' = f'g + fg' \tag{16}$$

Příklad $(x^3 \sin(x))' = 3x^2 \sin(x) + x^3 \cos(x)$

$$(f(g)) = f'(g)g' \tag{17}$$

Příklad $(\sin(x^3))' = \cos(x^3)(x^3)' = \cos(x^3)(3x^2) = 3\cos(x^3)x^2$