Похідні основних елементарних функцій

$C' = 0, (C = const)$	$x' = 1$
$(x^n)' = nx^{n-1}$	$\left(\frac{1}{x}\right)' = -\frac{1}{x^2}$
$\left(\sqrt[n]{x}\right)' = \frac{1}{n \cdot \sqrt[n]{x^{n-1}}}$	$\left(\sqrt{x}\right)' = \frac{1}{2 \cdot \sqrt{x}}$
$\left(a^x\right)' = a^x \ln a$	$\left(e^x\right)' = e^x$
$\left(\log_a x\right)' = \frac{1}{x \ln a}$	$\left(\ln x\right)' = \frac{1}{x}$
$\left(\sin x\right)' = \cos x$	$\left(\cos x\right)' = -\sin x$
$\left(tgx\right)' = \frac{1}{\cos^2 x}$	$\left(ctgx\right)' = -\frac{1}{\sin^2 x}$
$\left(\arcsin x\right)' = \frac{1}{\sqrt{1-x^2}}$	$\left(\arccos x\right)' = -\frac{1}{\sqrt{1-x^2}}$
$\left(arctgx\right)' = \frac{1}{1+x^2}$	$\left(arcctgx\right)' = -\frac{1}{1+x^2}$

Правила диференціювання

$\left(u \pm v\right)' = u' \pm v'$	$\left(u \cdot v\right)' = u' \cdot v + v' \cdot u$
$\left(\frac{u}{v}\right)' = \frac{u' \cdot v - v' \cdot u}{v^2}$	$\left(C \cdot u\right)' = C \cdot u'$

Похідна складеної функції

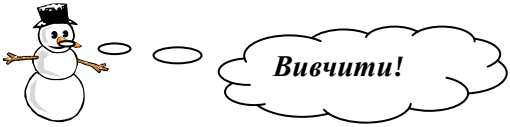
$$\boxed{y'_x = y'_u \cdot u'_x}$$

Похідна оберненої функції

$$\boxed{x'_y = \frac{1}{y'_x}}$$

Похідна функції, заданої параметрично:

$$\boxed{y'_x = \frac{y'_t}{x'_t}}$$



Таблиця інтегралів

$\int du = u + C$	$\int tg\,u\ du = -\ln\lvert\cos u\rvert + C$
$\int u^n du = \frac{u^{n+1}}{n+1} + C$	$\int ctg\,u\ du = \ln\lvert\sin u\rvert + C$
$\int \frac{du}{\sqrt{u}} = 2\sqrt{u} + C$	$\int \frac{du}{cos^2 u} = tg\ u + C$
$\int \frac{du}{u^2} = -\frac{1}{u} + C$	$\int \frac{du}{sin^2 u} = -ctg\ u + C$
$\int \frac{du}{u} = ln\lvert u\rvert + C$	$\int \frac{du}{\sqrt{a^2 - u^2}} = arcsin\frac{u}{a} + C$
$\int e^u du = e^u + C$	$\int \frac{du}{a^2 + u^2} = \frac{1}{a} arctg\frac{u}{a} + C$
$\int a^u du = \frac{a^u}{ln\,a} + C$	$\int \frac{du}{u^2 - a^2} = \frac{1}{2a} ln\left\lvert\frac{u-a}{u+a}\right\rvert + C$
$\int sin\,u\ du = -cos\,u + C$	$\int \frac{du}{a^2 - u^2} = \frac{1}{2a} ln\left\lvert\frac{a+u}{a-u}\right\rvert + C$
$\int cos\,u\ du = sin\,u + C$	$\int \frac{du}{sin\,u} = ln\,tg\left\lvert\frac{u}{2}\right\rvert + C$
$\int \frac{du}{\sqrt{u^2 + a}} = \ln\left\lvert u + \sqrt{u^2 + a}\right\rvert + C$	$\int \frac{du}{\cos u} = \ln\left\lvert tg\left(\frac{\pi}{4} + \frac{u}{2}\right)\right\rvert + C$
$\int \sqrt{a^2 - u^2}\,du = \frac{u}{2}\sqrt{a^2 - u^2} + \frac{a^2}{2}\arcsin\frac{u}{a} + C$	
$\int \sqrt{u^2 + a}\,du = \frac{u}{2}\sqrt{u^2 + a} + \frac{a}{2}\ln\left\lvert u + \sqrt{u^2 + a}\right\rvert + C$	