

Integrály elementárních funkcí

$$\int x^n dx = \frac{x^{n+1}}{n+1} \quad (n \neq -1, n \in \mathbf{Z}) \quad (1)$$

$$\int \frac{1}{x} dx = \ln |x| \quad (2)$$

$$\int \frac{1}{1+x^2} dx = \arctan x \quad (3)$$

$$\int \frac{1}{1-x^2} dx = \frac{1}{2} \ln \left| \frac{1+x}{1-x} \right| \quad (4)$$

$$\int \frac{1}{\sqrt{1-x^2}} dx = \arcsin x = -\arccos x \quad (5)$$

$$\int \frac{1}{\sqrt{x^2+1}} dx = \ln \left| x + \sqrt{x^2+1} \right| \quad (6)$$

$$\int \frac{1}{\sqrt{x^2-1}} dx = \ln \left| x + \sqrt{x^2-1} \right| \quad (7)$$

$$\int e^x dx = e^x \quad (8)$$

$$\int a^x dx = \frac{a^x}{\ln a} \quad (a > 0, a \neq 1) \quad (9)$$

$$\int \sin x dx = -\cos x \quad (10)$$

$$\int \cos x dx = \sin x \quad (11)$$

$$\int \frac{1}{\sin^2 x} dx = -\cot x \quad (12)$$

$$\int \frac{1}{\cos^2 x} dx = \tan x \quad (13)$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| \quad (14)$$

Metoda “per partes”

$$(uv)' = u'v + uv' \Rightarrow uv' = (uv)' - u'v$$

$$\int (uv') = uv - \int (u'v) \quad (15)$$

Příklady substitucí pro metodu “per partes”

integrál	substituce	
$\int x^n e^{ax} dx$	$u = x^n$	$v' = e^{ax}$
$\int x^n \cos ax dx$	$u = x^n$	$v' = \cos ax$
$\int x^n \sin ax dx$	$u = x^n$	$v' = \sin ax$
$\int x^n \arctan x dx$	$u = \arctan x$	$v' = x^n$
$\int x^n \arccos x dx$	$u = \arccos x$	$v' = x^n$
$\int x^n \arcsin x dx$	$u = \arcsin x$	$v' = x^n$
$\int x^a \log_b^n x dx$	$u = \log_b^n x$	$v' = x^a$