# ODVODI

| $f(x)$ | $x^n$ | $x^{-n}$ | $\ln x$ | $\log_a x$ | $a^x$ | $e^x$ | $\sin x$ | $\cos x$ | $\tan x$ | $\text{ctan}\, x$ | $\text{arc sin}\, x$ | $\text{arc cos}\, x$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $f'(x)$ | $n\cdot x^{n-1}$ | $-n\cdot x^{-n-1}$ | $\frac{1}{x}$ | $\frac{1}{x}\log_a e$ | $\frac{a^x}{\log_a e}$ | $e^x$ | $\cos x$ | $-\sin x$ | $\frac{1}{\cos^2 x}$ | $-\frac{1}{\sin^2 x}$ | $\frac{1}{\sqrt{1-x^2}}$ | $\frac{-1}{\sqrt{1-x^2}}$ |

| | $\text{arc tan}\, x$ | $\text{arc ctan}\, x$ | $\ln(x+\sqrt{x^2 \pm a^2})$ |
|---|---|---|---|
| | $\frac{1}{(1+x^2)}$ | $\frac{-1}{(1+x^2)}$ | $\frac{1}{(\sqrt{x^2 \pm a^2})}$ |

$y'' = (f'(x))'$ $\quad (f\cdot g)' = f'\cdot g + f\cdot g'$ $\quad \left(\frac{f}{g}\right)' = \frac{f'\cdot g - f\cdot g'}{g^2}$

L'Hospitalovo pravilo: $\lim\limits_{x\to x_0} \frac{u(x)}{v(x)} = \lim \frac{u'(x)}{v'(x)}$

# INTEGRALI

| $f(x)$ | $x^n dx$ | $a^x dx$ | $e^x dx$ | $\frac{1}{x} dx$ | $\sin x\, dx$ | $\cos x\, dx$ | $\frac{1}{\cos^2 x} dx$ | $\frac{1}{\sin^2 x}$ |
|---|---|---|---|---|---|---|---|---|
| $\int f(x)$ | $\frac{x^{n+1}}{n+1}$ | $\frac{a^x}{\ln a}$ | $e^x$ | $\ln x$ | $-\cos x$ | $\sin x$ | $\tan x$ | $-\text{ctan}\, x$ |

$\boxed{+C!}$

$\int (f(x) \pm g(x))\,dx = \int (f(x)\,dx) \pm \int (g(x)\,dx)$ $\quad \int A\cdot f(x)\,dx = A\int f(x)\cdot dx$

Perpartes: $\int u\cdot dv = u\cdot v - \int v\cdot du$ (uporaba: $\int$ polinom $\cdot e^{ax+b}$; $\int$ pol $\cdot \sin(\dots)$; $\int$ pol $\cdot \cos(\dots)$, ...)

Eulerjev n.: $\int \frac{x^2\cdot dx}{\sqrt{5+4x+x^2}} \overset{E.}{\underset{N.}{=}} (Ax+B)\sqrt{5+4x+x^2} + K\cdot\int \frac{dx}{\sqrt{5+4x+x^2}}$

odvajamo: $\frac{x^2}{\sqrt{\dots}} = (Ax+B)'\cdot\sqrt{\dots} + (Ax+B)\cdot(\sqrt{\dots})' + \frac{K}{\sqrt{\dots}}$

# VRSTE

- konvergentna: ima končno vsoto ; (če je lim splošnega člena $(a_n) \neq 0$ - vrsta ne konvergira)
- kvocientni kriterij: $\lim\limits_{n\to\infty}\left|\frac{a_{n+1}}{a_n}\right| = a$ $\quad$ ($a<1$ - konvergira, $a>1$ - divergira, $a=1$ - ni odgovora!)

  integralski k.: $\int_1^\infty |a_n|\,dn = a$
- Taylorjeva vrsta: $f(x) = f(a) + \frac{f'(a)}{1!}(x-a) + \frac{f''(a)}{2!}\cdot(x-a)^2 + \dots + \frac{f^{(n)}(a)}{(n)!}(x-a)^n$