

### Prvi izvodi

1.  $(\alpha f(x) + \beta g(x))' = \alpha f'(x) + \beta g'(x)$
2.  $(f(x) \cdot g(x))' = f'(x)g(x) + f(x)g'(x)$
3.  $\left(\frac{f(x)}{g(x)}\right)' = \frac{f'(x)g(x) - f(x)g'(x)}{g^2(x)}$
4.  $(f(g(x)))' = f'(g(x))g'(x)$

- i)  $c' = 0$
- ii)  $(x^n)' = nx^{n-1}$ ,  $n \neq 0$
- iii)  $(\log_a x)' = \frac{1}{x \ln a}$
- iv)  $(a^x)' = a^x \ln a$
- v)  $(\sin x)' = \cos x$
- vi)  $(\cos x)' = -\sin x$
- vii)  $(\arcsin x)' = \frac{1}{\sqrt{1-x^2}}$
- viii)  $(\arctg x)' = \frac{1}{1+x^2}$
- ix)  $(\ln x)' = \frac{1}{x}$
- x)  $(e^x)' = e^x$
- xi)  $(\sqrt{x})' = \frac{1}{2\sqrt{x}}$

### Integrali

1.  $\left(\int f(x)dx\right)' = f(x)$ ,
  2.  $\int F'(x)dx = F(x) + c$ ,
  3.  $\int f(x)dx = \int f(\varphi(t))\varphi'(t)dt$ ,  $x = \varphi(t)$ ,
  4.  $\int(\alpha f(x) + \beta g(x))dx = \alpha \int f(x)dx + \beta \int g(x)dx$
  5.  $\int u dv = uv - \int v du$ .
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- i)  $\int x^n dx = \frac{x^{n+1}}{n+1} + c$ ,  $n \neq -1$ ,
  - ii)  $\int \sin x dx = -\cos x + c$ ,
  - iii)  $\int \cos x dx = \sin x + c$ ,
  - iv)  $\int \frac{dx}{\cos^2 x} = \operatorname{tg} x + c$ ,
  - v)  $\int \frac{dx}{\sin^2 x} = -\operatorname{ctg} x + c$ ,
  - xi)  $\int \frac{P_n(x)dx}{\sqrt{ax^2 + bx + c}} = Q_{n-1}(x)\sqrt{ax^2 + bx + c} + \lambda \int \frac{dx}{\sqrt{ax^2 + bx + c}}$ .
  - vi)  $\int a^x dx = \frac{a^x}{\ln a} + c$ ,  $a > 0$ ,  $a \neq 1$ ,
  - vii)  $\int \frac{dx}{a^2 + x^2} = \frac{1}{a} \arctg \frac{x}{a} + c$ ,  $a \neq 0$ ,
  - viii)  $\int \frac{dx}{\sqrt{a^2 - x^2}} = \arcsin \frac{x}{a} + c$ ,  $a \neq 0$ ,
  - ix)  $\int \frac{dx}{\sqrt{x^2 + a}} = \ln|x + \sqrt{x^2 + a}| + c$ ,
  - x)  $\int \frac{dx}{x} = \ln|x| + c$ ,  $x \neq 0$ ,

### Opšta trigonometrijska smena

$$\operatorname{tg} \frac{x}{2} = t, \quad \cos x = \frac{1-t^2}{1+t^2}, \quad \sin x = \frac{2t}{1+t^2}, \quad dx = \frac{2dt}{1+t^2}$$