

## Reguli pentru derivare și integrare

$$(cf(x))' = cf'(x)$$

$$(f(x) + g(x))' = f'(x) + g'(x)$$

$$(f(x) \cdot g(x))' = f'(x) \cdot g(x) + f(x) \cdot g'(x)$$

$$(f(g(x)))' = f'(g(x)) \cdot g'(x)$$

$$(f^{-1}(y))' = \frac{1}{f'(f^{-1}(y))}$$

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

$$\int_a^b (f(x) + g(x))dx = \int_a^b f(x)dx + \int_a^b g(x)dx$$

$$\int_a^b cf(x)dx = c \int_a^b f(x)dx$$

$$\int_a^b f(x)dx = F(x)\Big|_a^b = F(b) - F(a), \text{ } F \text{ este primitivă a lui } f$$

$$\int_a^b f(x)g'(x)dx = f(x)g(x)\Big|_a^b - \int_a^b f'(x)g(x)dx \quad \text{integrare prin părți}$$

$$\int_a^b f(\varphi(x))\varphi'(x)dx = \int_{\varphi(a)}^{\varphi(b)} f(t)dt \quad \text{schimbare de variabilă}$$

Nr.	Derivate
1	$c' = 0$
2	$x' = 1$
3	$(x^n)' = nx^{n-1}$
4	$(\sqrt{x})' = \frac{1}{2\sqrt{x}}$
5	$\left(\frac{1}{x}\right)' = -\frac{1}{x^2}$
6	$(e^x)' = e^x$
7	$(a^x)' = a^x \ln a$
8	$(\ln x)' = \frac{1}{x}$
9	$(\log_a x)' = \frac{1}{x \ln a}$
10	$(\operatorname{arctg} x)' = \frac{1}{x^2 + 1}$
11	$(\operatorname{arcctg} x)' = -\frac{1}{x^2 + 1}$
12	$(\arcsin x)' = \frac{1}{\sqrt{1-x^2}}$
13	$(\arccos x)' = -\frac{1}{\sqrt{1-x^2}}$
14	$(\sin x)' = \cos x$
15	$(\cos x)' = -\sin x$
16	$(\operatorname{tg} x)' = \frac{1}{\cos^2 x}$
17	$(\operatorname{ctg} x)' = -\frac{1}{\sin^2 x}$
18	$(\sqrt{x^2 - a^2})' = \frac{x}{\sqrt{x^2 - a^2}}$
19	$(\sqrt{x^2 + a^2})' = \frac{x}{\sqrt{x^2 + a^2}}$
20	$(\sqrt{a^2 - x^2})' = -\frac{x}{\sqrt{a^2 - x^2}}$

Nr.	Integrale nedefinite
1	$\int dx = x + C$
2	$\int x dx = \frac{x^2}{2} + C$
3	$\int x^n dx = \frac{x^{n+1}}{n+1} + C$
4	$\int \sqrt{x} dx = \frac{2}{3} x\sqrt{x} + C$
5	$\int e^x dx = e^x + C$
6	$\int a^x dx = \frac{a^x}{\ln a} + C$
7	$\int \frac{1}{x} dx = \ln x  + C$
8	$\int \frac{1}{x^2 - a^2} dx = \frac{1}{2a} \ln \left  \frac{x-a}{x+a} \right  + C$
9	$\int \frac{1}{x^2 + 1} dx = \operatorname{arctg} x + C$
10	$\int \frac{1}{x^2 + a^2} dx = \frac{1}{a} \operatorname{arctg} \frac{x}{a} + C$
11	$\int \frac{1}{\sqrt{x^2 - a^2}} dx = \ln x + \sqrt{x^2 - a^2}  + C$
12	$\int \frac{1}{\sqrt{x^2 + a^2}} dx = \ln(x + \sqrt{x^2 + a^2}) + C$
13	$\int \frac{1}{\sqrt{1-x^2}} dx = \arcsin x + C$
14	$\int \frac{1}{\sqrt{a^2 - x^2}} dx = \arcsin \frac{x}{a} + C$
15	$\int \sin x dx = -\cos x + C$
16	$\int \cos x dx = \sin x + C$
17	$\int \operatorname{tg} x dx = -\ln \cos x  + C$
18	$\int \operatorname{ctg} x dx = \ln \sin x  + C$
19	$\int \frac{1}{\cos^2 x} dx = \operatorname{tg} x + C$
20	$\int \frac{1}{\sin^2 x} dx = -\operatorname{ctg} x + C$
21	$\int \frac{x}{\sqrt{x^2 - a^2}} dx = \sqrt{x^2 - a^2} + C$
22	$\int \frac{x}{\sqrt{x^2 + a^2}} dx = \sqrt{x^2 + a^2} + C$
23	$\int \frac{x}{\sqrt{a^2 - x^2}} dx = -\sqrt{a^2 - x^2} + C$