Reguli pentru derivare și integrare

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

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

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

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

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

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

$$\begin{split} &\int_a^b \big(f(x)+g(x)\big)dx = \int_a^b f(x)dx + \int_a^b g(x)dx \\ &\int_a^b cf(x)dx = c\int_a^b f(x)dx \\ &\int_a^b f(x)dx = F(x)\Big|_a^b = F(b) - F(a), \ F \ \text{este primitivă a lui} \ f \\ &\int_a^b f(x)g'(x)dx = f(x)g(x)\Big|_a^b - \int_a^b f'(x)g(x)dx \quad \text{integrare prin părți} \\ &\int_a^b f(\varphi(x))\varphi'(x)dx = \int_{\varphi(a)}^{\varphi(b)} f(t)dt \quad \text{schimbare de variabilă} \end{split}$$

$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Nr.	Derivate
3 $(x^n)' = nx^{n-1}$ 4 $(\sqrt{x})' = \frac{1}{2\sqrt{x}}$ 5 $(\frac{1}{x})' = -\frac{1}{x^2}$ 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 $(\arctan x)' = \frac{1}{x^2 + 1}$ 11 $(\arctan x)' = -\frac{1}{x^2 + 1}$ 12 $(\arctan x)' = -\frac{1}{\sqrt{1 - x^2}}$ 13 $(\arctan x)' = \cos x$ 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 $(\sqrt{x^2 + a^2})' = \frac{x}{\sqrt{x^2 + a^2}}$		
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	2	$x^{t}=1$
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	3	$(x^n) = nx^{n-1}$
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 $(\arctan x)' = \frac{1}{x^2 + 1}$ 11 $(\arctan x)' = -\frac{1}{x^2 + 1}$ 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 $(\sqrt{x^2 + a^2})' = \frac{x}{\sqrt{x^2 + a^2}}$	4	$\left(\sqrt{x}\right) = \frac{1}{2\sqrt{x}}$
7	5	$\left(\frac{1}{x}\right)' = -\frac{1}{x^2}$
8 $(\ln x)' = \frac{1}{x}$ 9 $(\log_a x)' = \frac{1}{x \ln a}$ 10 $(\arctan x)' = \frac{1}{x^2 + 1}$ 11 $(\arctan x)' = -\frac{1}{x^2 + 1}$ 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 $(\sqrt{x^2 + a^2})' = \frac{x}{\sqrt{x^2 + a^2}}$	6	$(e^x) = e^x$
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 $(\operatorname{arcsin} x)' = \frac{1}{\sqrt{1 - x^{2}}}$ 13 $(\operatorname{arccos} x)' = -\frac{1}{\sqrt{1 - x^{2}}}$ 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 $(\sqrt{x^{2} + a^{2}})' = \frac{x}{\sqrt{x^{2} + a^{2}}}$	7	$\left(a^{x}\right) = a^{x} \ln a$
10 $\left(\operatorname{arctg} x\right)' = \frac{1}{x^2 + 1}$ 11 $\left(\operatorname{arcctg} x\right)' = -\frac{1}{x^2 + 1}$ 12 $\left(\operatorname{arcsin} x\right)' = \frac{1}{\sqrt{1 - x^2}}$ 13 $\left(\operatorname{arccos} x\right)' = -\frac{1}{\sqrt{1 - x^2}}$ 14 $\left(\operatorname{sin} x\right)' = \cos x$ 15 $\left(\cos x\right)' = -\sin x$ 16 $\left(\operatorname{tg} x\right)' = \frac{1}{\cos^2 x}$ 17 $\left(\operatorname{ctg} x\right)' = -\frac{1}{\sin^2 x}$ 18 $\left(\sqrt{x^2 - a^2}\right)' = \frac{x}{\sqrt{x^2 - a^2}}$ 19 $\left(\sqrt{x^2 + a^2}\right)' = \frac{x}{\sqrt{x^2 + a^2}}$	8	
10 $\left(\operatorname{arctg} x\right)' = \frac{1}{x^2 + 1}$ 11 $\left(\operatorname{arcctg} x\right)' = -\frac{1}{x^2 + 1}$ 12 $\left(\operatorname{arcsin} x\right)' = \frac{1}{\sqrt{1 - x^2}}$ 13 $\left(\operatorname{arccos} x\right)' = -\frac{1}{\sqrt{1 - x^2}}$ 14 $\left(\operatorname{sin} x\right)' = \cos x$ 15 $\left(\cos x\right)' = -\sin x$ 16 $\left(\operatorname{tg} x\right)' = \frac{1}{\cos^2 x}$ 17 $\left(\operatorname{ctg} x\right)' = -\frac{1}{\sin^2 x}$ 18 $\left(\sqrt{x^2 - a^2}\right)' = \frac{x}{\sqrt{x^2 - a^2}}$ 19 $\left(\sqrt{x^2 + a^2}\right)' = \frac{x}{\sqrt{x^2 + a^2}}$	9	$(\log_a x)' = \frac{1}{x \ln a}$
11	10	$(\operatorname{arctg} x)' = \frac{1}{x^2 + 1}$
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 $(\sqrt{x^2 + a^2})' = \frac{x}{\sqrt{x^2 + a^2}}$	11	$(\operatorname{arcctg} x)' = -\frac{1}{x^2 + 1}$
$ \frac{\sqrt{1-x^2}}{14} \qquad (\sin x)' = \cos x $ 15 (\cos x)' = -\sin x 16 (\text{tg } x)' = \frac{1}{\cos^2 x} 17 (\cos x)' = -\frac{1}{\sin^2 x} 18 \left(\sqrt{x^2 - a^2}\right) = \frac{x}{\sqrt{x^2 - a^2}} 19 \left(\sqrt{x^2 + a^2}\right) = \frac{x}{\sqrt{x^2 + a^2}} 20 \left(\sqrt{a^2 - x^2}\right) = \frac{x}{x} \]	12	$\left(\arcsin x\right)' = \frac{1}{\sqrt{1-x^2}}$
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 $(\sqrt{x^2 + a^2})' = \frac{x}{\sqrt{x^2 + a^2}}$	13	$\left(\arccos x\right)' = -\frac{1}{\sqrt{1-x^2}}$
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 $(\sqrt{x^2 + a^2})' = \frac{x}{\sqrt{x^2 + a^2}}$	14	$(\sin x)' = \cos x$
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 $(\sqrt{x^2 + a^2})' = \frac{x}{\sqrt{x^2 + a^2}}$	15	$(\cos x)' = -\sin x$
17 $\left(\operatorname{ctg} x\right)' = -\frac{1}{\sin^2 x}$ 18 $\left(\sqrt{x^2 - a^2}\right)' = \frac{x}{\sqrt{x^2 - a^2}}$ 19 $\left(\sqrt{x^2 + a^2}\right)' = \frac{x}{\sqrt{x^2 + a^2}}$	16	$(\operatorname{tg} x) = \frac{1}{\cos^2 x}$
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 $\sqrt{a^2 - x^2} = \frac{x}{\sqrt{x^2 + a^2}}$	17	$(\operatorname{ctg} x)' = -\frac{1}{\sin^2 x}$
$\sqrt{x^2 + a^2}$	18	$(\sqrt{2} 2)$ x
$20 \qquad \left(\sqrt{a^2 - x^2}\right) = -\frac{x}{\sqrt{a^2 - x^2}}$	19	$\left(\sqrt{x^2 + a^2}\right) = \frac{x}{\sqrt{x^2 + a^2}}$
	20	$\left(\sqrt{a^2 - x^2}\right)' = -\frac{x}{\sqrt{a^2 - x^2}}$

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	$\int \frac{1}{x^2 + 1} dx = \arctan x + C$
10	$\int \frac{1}{x^2 + a^2} dx = \frac{1}{a} \arctan \frac{x}{a} + C$
11	$\int \frac{1}{\sqrt{x^2 - a^2}} dx = \ln \left x + \sqrt{x^2 - a^2} \right + C$
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	$\int t g x dx = -\ln \cos x + C$
18	$\int \operatorname{ctg} x dx = \ln \left \sin x \right + C$
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	$\int \frac{x}{\sqrt{a^2 - x^2}} dx = -\sqrt{a^2 - x^2} + C$