FORMULE
DERIVATE ŞI INTEGRALE

I DERIVATE

$(x^n)' = n \cdot x^{n-1}$ $\quad$ $(u(x)^n)' = n \cdot u(x)^{n-1} \cdot (u(x))'$

$(a^x)' = a^x \cdot \ln a$ $\quad$ $(a^{u(x)})' = a^{u(x)} \cdot \ln a \cdot (u(x))'$

$(e^x)' = e^x$ $\quad$ $(e^{u(x)})' = e^{u(x)} \cdot (u(x))'$

$(\ln x)' = \frac{1}{x}$ $\quad$ $(\ln u(x))' = \frac{1}{u(x)} \cdot (u(x))'$

$(\log_a x)' = \frac{1}{x \cdot \ln a}$ $\quad$ $(\log_a u(x))' = \frac{1}{u(x) \cdot \ln a} \cdot (u(x))'$

$(\sqrt{x})' = \frac{1}{2 \cdot \sqrt{x}}$ $\quad$ $(\sqrt{u(x)})' = \frac{1}{2 \cdot \sqrt{u(x)}} \cdot (u(x))'$

$(\sqrt[n]{x})' = \frac{1}{n \cdot \sqrt[n]{x^{n-1}}}$ $\quad$ $(\sqrt[n]{u(x)})' = \frac{1}{n \cdot \sqrt[n]{u(x)^{n-1}}} \cdot (u(x))'$

$(\cos x)' = -\sin x$ $\quad$ $(\cos u(x))' = -\sin u(x) \cdot (u(x))'$

$(\sin x)' = \cos x$ $\quad$ $(\sin u(x))' = \cos u(x) \cdot (u(x))'$

$(\tan x)' = \frac{1}{\cos^2 x}$ $\quad$ $(\tan u(x))' = \frac{1}{\cos^2 u(x)} \cdot (u(x))'$

$(\cot x)' = -\frac{1}{\sin^2 x}$ $\quad$ $(\cot u(x))' = -\frac{1}{\sin^2 u(x)} \cdot (u(x))'$

$(\arccos x)' = -\frac{1}{\sqrt{1-x^2}}$ $\quad$ $(\arccos u(x))' = -\frac{1}{\sqrt{1-u(x)^2}} \cdot (u(x))'$

$(\arcsin x)' = \frac{1}{\sqrt{1-x^2}}$ $\quad$ $(\arcsin u(x))' = \frac{1}{\sqrt{1-u(x)^2}} \cdot (u(x))'$

$(\arctan x)' = \frac{1}{1+x^2}$ $\quad$ $(\arctan u(x))' = \frac{1}{1+u(x)^2} \cdot (u(x))'$

$(\text{arccot}\, x)' = -\frac{1}{1+x^2}$ $\quad$ $(\text{arccot}\, u(x))' = -\frac{1}{1+u(x)^2} \cdot (u(x))'$

OPERAŢII CU DERIVATE

$x' = 1$

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

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

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

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

$((f(x))^{(g(x))})' = (g(x) \cdot (f(x))^{g(x)-1} \cdot (f(x))' + (f(x))^{(g(x))} \cdot \ln(f(x)) \cdot (g(x))'$

II INTEGRALE

$\int x^n dx = \frac{x^{n+1}}{n+1} + C$

$\int a^x dx = \frac{a^x}{\ln a} + C$

$\int e^x dx = e^x + C$

$\int \frac{1}{x} dx = \ln x + C$

$\int \frac{1}{x^2-a^2} dx = \frac{1}{2a} \cdot \ln\left|\frac{x-a}{x+a}\right| + C$

$\int \frac{1}{x^2+a^2} dx = \frac{1}{a} \cdot \arctan \frac{x}{a} + C$

$\int \frac{1}{\sqrt{x^2-a^2}} dx = \ln|x + \sqrt{x^2 - a^2}| + C$

$\int \frac{1}{\sqrt{x^2+a^2}} dx = \ln|x + \sqrt{x^2 + a^2}| + C$

$\int \frac{1}{\sqrt{a^2-x^2}} dx = \arcsin \frac{x}{a} + C$

$\int \sin x dx = -\cos x + C$

$\int \cos x dx = \sin x + C$

$\int \frac{1}{\cos^2 x} dx = \tan x + C$

$\int \frac{1}{\sin^2 x} dx = -\cot x + C$

OPERAŢII CU INTEGRALE

$\int (f(x) + g(x))dx = \int f(x)dx + \int g(x)dx + C$

$\int (f(x) - g(x))dx = \int f(x)dx - \int g(x)dx + C$

$\int \alpha \cdot f(x)dx = \alpha \cdot \int f(x)dx + C$ unde α este o constantă