

INTEGRAL UCHUN FORMULALAR.

$$\int f(x)dx = F(x) + C, \text{ bunda}$$

$$F'(x) = f(x).$$

$F(x)$ funksiya $f(x)$ ning boshlang'ich funksiyasidir.

$$\int -integral \text{ belgisi}$$

$f(x)$ – integral osti funksiyasi

x – integrallash bajariladigan o'zgaruvchi

#	INTEGRAL
1	$\int dx = x + C$
2	$\int kdx = kx + C$
3	$\int x^n dx = \frac{x^{n+1}}{n+1} + C$
4	$\int x dx = \frac{x^2}{2} + C$
5	$\int \sqrt{x} dx = \frac{2\sqrt{x^3}}{3} + C$
6	$\int \frac{1}{\sqrt{x}} dx = 2\sqrt{x} + C$
7	$\int (ax + b)^n dx = \frac{(ax + b)^{n+1}}{a(n+1)} + C$
8	$\int \sin x dx = -\cos x + C$
9	$\int \sin(kx + b) dx = -\frac{1}{k} \cos(kx + b) + C$

10	$\int \frac{1}{\sin x} dx = \ln \left \operatorname{tg} \frac{x}{2} \right + C$
11	$\int \frac{1}{\sin^2 x} dx = -\operatorname{ctg} x + C$
12	$\int \frac{1}{\sin^2(kx + b)} dx = -\frac{1}{k} \operatorname{ctg}(kx + b) + C$
13	$\int \cos x dx = \sin x + C$
14	$\int \cos(kx + b) dx = \frac{1}{k} \sin(kx + b) + C$
15	$\int \frac{1}{\cos x} dx = \ln \left \operatorname{tg} \left(\frac{x}{2} + \frac{\pi}{4} \right) \right + C$
16	$\int \frac{1}{\cos^2 x} dx = \operatorname{tg} x + C$
17	$\int \frac{1}{\cos^2(kx + b)} dx = \frac{1}{k} \operatorname{tg}(kx + b) + C$
18	$\int \operatorname{tg} x dx = -\ln \cos x + C$
19	$\int \operatorname{ctg} x dx = \ln \sin x + C$
20	$\int \frac{1}{x} dx = \ln x + C$
21	$\int \frac{a}{kx + b} dx = \frac{a}{k} \ln kx + b + C$
22	$\int \frac{f'(x)}{f(x)} dx = \ln f(x) + C$
23	$\int a^x dx = \frac{a^x}{\ln a} + C$
24	$\int a^{kx+b} dx = \frac{a^{kx+b}}{k \ln a} + C$
25	$\int e^x dx = e^x + C$

26	$\int e^{kx+b} dx = \frac{1}{k} e^{kx+b} + C$	42	agar $f(x)$ – toq funksiya bo'lsa, $\int_{-a}^a f(x) dx = 0;$
27	$\int \ln x dx = x \ln x - x + C$	43	agar $f(x)$ – juft funksiya bo'lsa, $\int_{-a}^a f(x) dx = 2 \int_0^a f(x) dx;$
28	$\int \frac{1}{1+x^2} dx = \arctg x + C$		
29	$\int \frac{1}{a^2+x^2} dx = \frac{1}{a} \arctg \frac{x}{a} + C$		
30	$\int \frac{1}{x^2-a^2} dx = \frac{1}{2a} \ln \left \frac{x-a}{x+a} \right + C$		
31	$\int \frac{1}{\sqrt{x^2 \pm a^2}} dx = \ln x + \sqrt{x^2 \pm a^2} + C$		
32	$\int \frac{1}{\sqrt{a^2-x^2}} dx = \arcsin \frac{x}{a} + C$		
33	$\int \frac{1}{\sqrt{a^2-x^2}} dx = -\arccos \frac{x}{a} + C$		
34	$\int kf(x) dx = k \int f(x) dx + C$		
35	$\left(\int f(x) dx \right)' = f(x)$		
36	$\int_a^b f(x) dx = - \int_b^a f(x) dx$		
37	$\int_a^a f(x) dx = 0$		
38	$\int_a^b (f(x) \pm g(x)) dx = \int_a^b f(x) dx \pm \int_a^b g(x) dx$		
39	$\int_a^b f(x) dx = \int_a^c f(x) dx + \int_c^b f(x) dx$		
40	$\int u dv = uv - \int v du$		
41	$\int f(x) \cdot f'(x) dx = \left[\begin{matrix} f(x) = t \\ f'(x) dx = dt \end{matrix} \right] = \int t dt$		