Таблица основных интегралов

$\int 0 \cdot dx = C$	$\int 1 \cdot dx = \int dx = x + C$	$\int x^{\alpha} dx = \frac{x^{\alpha+1}}{\alpha+1} + C, \quad \alpha \neq -1$
$\int \frac{dx}{x^2} = -\frac{1}{x} + C$	$\int \frac{dx}{\sqrt{x}} = 2\sqrt{x} + C$	$\int \frac{dx}{\sqrt[3]{x}} = \frac{3}{2} x^{\frac{2}{3}} + C$
$\int \frac{dx}{x} = \ln\lvert x\rvert + C$	$\int \frac{dx}{x+a} = \ln\lvert x+a\rvert + C$	$\int \frac{dx}{x^2 - a^2} = \frac{1}{2a} \ln\left\lvert \frac{x-a}{x+a}\right\rvert + C \ \ (a \neq 0)$
$\int \frac{xdx}{x^2 \pm a^2} = \frac{1}{2} \ln\lvert x^2 \pm a^2\rvert + C$	$\int \frac{dx}{x^2+1} = arctgx + C$	$\int \frac{dx}{x^2 + a^2} = \frac{1}{a} arctg \frac{x}{a} + C$
$\int \frac{dx}{\sqrt{1-x^2}} = \arcsin x + C$	$\int \frac{dx}{\sqrt{a^2 - x^2}} = \arcsin \frac{x}{a} + C$	$\int \frac{dx}{\sqrt{x^2 \pm a^2}} = \ln\left\lvert x + \sqrt{x^2 \pm a^2}\right\rvert + C \ \ (a \neq 0)$
$\int e^x dx = e^x + C$	$\int \frac{dx}{e^x} = -e^{-x} + C$	$\int a^x dx = \frac{a^x}{\ln a} + C$
$\int \sin x dx = -\cos x + C$	$\int \cos x dx = \sin x + C$	$\int tgxdx = -\ln\lvert\cos x\rvert + C$
$\int ctgxdx = \ln\lvert\sin x\rvert + C$	$\int \frac{dx}{\cos^2 x} = tgx + C$	$\int \frac{dx}{\sin^2 x} = -ctgx + C$
$\int shxdx = chx + C$	$\int chxdx = shx + C$	$\int thxdx = \ln\lvert chx\rvert + C$
$\int cthxdx = \ln\lvert shx\rvert + C$	$\int \frac{dx}{ch^2 x} = thx + C$	$\int \frac{dx}{sh^2 x} = -cthx + C$
$\int \sqrt{a^2 - x^2} dx = \frac{x}{2}\sqrt{a^2 - x^2} + \frac{a^2}{2} \arcsin \frac{x}{a} + C$		$\int \sqrt{x^2 + A} dx = \frac{x}{2}\sqrt{x^2 + A} + \frac{A}{2} \ln\left\lvert x + \sqrt{x^2 + A}\right\rvert + C$

$\int (\alpha u + \beta v) dx = \alpha \int u dx + \beta \int v dx; \quad \int u dv = uv - \int v du;$

$\int f(x) dx = F(x) + C \Rightarrow \int f(\varphi(t)) d\varphi(t) = F(\varphi(t)) + C \Leftrightarrow \int f(\varphi(t)) \varphi'(t) dt = F(\varphi(t)) + C;$

$$\int f(ax+b) dx = \frac{1}{a} F(ax+b) + C; \quad J_n = \int \frac{dx}{(x^2 + a^2)^n} \Rightarrow J_{n+1} = \frac{1}{2na^2} \frac{x}{(x^2 + a^2)^n} + \frac{2n-1}{2n} J_n.$$

Таблица некоторых дифференциалов

$xdx = \frac{1}{2} d(x^2)$	$\frac{dx}{\sqrt{x}} = 2d(\sqrt{x})$	$\frac{dx}{x^2} = -d\left(\frac{1}{x}\right)$
$\cos x dx = d(\sin x)$	$\sin x dx = -d(\cos x)$	$\frac{dx}{\cos^2 x} = d(tgx)$
$\frac{dx}{\sin^2 x} = -d(ctgx)$	$\frac{dx}{\sqrt{1-x^2}} = d(\arcsin x)$	$\frac{dx}{1+x^2} = d(arctgx)$
$e^x dx = d(e^x)$	$a^x dx = \frac{1}{\ln a} d(a^x)$	$\frac{dx}{x} = d(\ln x)$