Таблица на основните неопределени интегрални:

$$\int dx = x + C \qquad \int Adx = Ax + C \qquad \int A.f(x)dx = A.\int f(x)dx$$

$$\int x^{\alpha}dx = \frac{x^{\alpha+1}}{\alpha+1} + C \ \ (\alpha \neq -1)$$

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

$$\int \frac{dx}{x^n} = \frac{-1}{(n-1)x^{n-1}} + C \ \ (n \neq 1)$$

$$\int \sqrt[n]{x}dx = \frac{n}{n+1}\sqrt[n]{x^{n+1}} + C \qquad \int \frac{dx}{\sqrt[n]{x}} = \frac{n}{n-1}\sqrt[n]{x^{n-1}} + C$$

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

$$\int \sin xdx = -\cos x + C \qquad \int \cos xdx = \sin x + C$$

$$\int \frac{dx}{\sin^2 x} = -\cot gx + C \qquad \int \frac{dx}{\cos^2 x} = tgx + C$$

$$\int \frac{dx}{\sin x} = \ln\left|tg\frac{x}{2}\right| + C \qquad \int \frac{dx}{\cos x} = -\ln\left|tg\left(\frac{\pi}{4} - \frac{x}{2}\right)\right| + C$$

$$\int \frac{dx}{1+x^2} = \begin{cases} arctgx + C \\ -arc\cot gx + C \end{cases} \qquad \int \frac{dx}{\sqrt{1-x^2}} = \begin{cases} \arcsin x + C \\ -\arccos x + C \end{cases}$$

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

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

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

$$\int \frac{dx}{\sqrt{x^2 + m}} = \ln\left|x + \sqrt{x^2 + m}\right| + C \qquad \int \sqrt{x^2 + m}dx = \frac{x}{2}\sqrt{x^2 + m} + \frac{m}{2}\ln\left|x + \sqrt{x^2 + m}\right| + C$$

$$\int \frac{dx}{(x+a)(x+b)} = \frac{1}{b-a}\ln\left|\frac{x+a}{x+b}\right| + C \qquad \int \frac{dx}{x^3 + 1} = \frac{1}{6}\ln\frac{(x+1)^2}{x^2 - x + 1} + \frac{1}{\sqrt{3}}arctg\frac{2x-1}{\sqrt{3}} + C$$

$$\int \frac{dx}{a\sin x + b\cos x} = \frac{1}{\sqrt{a^2 + b^2}}\ln\left|tg\left(\frac{x}{2} + arctg\frac{b}{a}\right)\right| + C$$

Интегриране по части: $\int udv = uv - \int vdu$

Определен интеграл:

1. Формула на Нютон-Лайбниц: $\int_a^b f(x)dx = F(x)\Big|_a^b = F(b) - F(a)$

2. Интегриране по части на определен интеграл: $\int_a^b udv = uv\Big|_a^b - \int_a^b vdu$