

ПЕРВООБРАЗНАЯ (неопределенный интеграл):

$$F(x) = \int f(x)dx$$

Таблица интегралов:

$$\int a \cdot dx = ax + C$$

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

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

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

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

$$\int \frac{1}{\cos^2 x} \cdot dx = \operatorname{tg} x + C$$

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

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

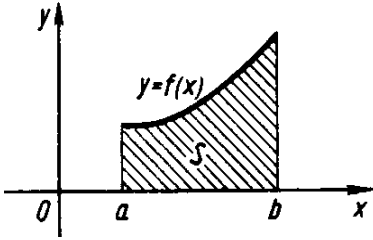
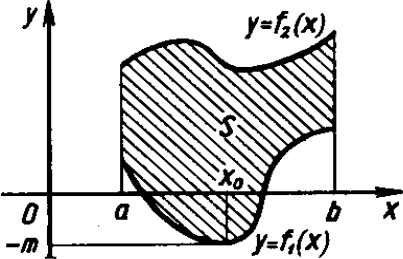
$$\int a^x \cdot dx = \frac{a^x}{\ln a} + C$$

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

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

$$\int f(ax+b) \cdot dx = \frac{1}{a}F(ax+b) + C$$

Вычисление площадей:

 <p>A Cartesian coordinate system with a vertical y-axis and a horizontal x-axis. The origin is labeled '0'. A curve labeled $y=f(x)$ starts at $x=a$ and ends at $x=b$. The region bounded by the x-axis, the vertical lines at $x=a$ and $x=b$, and the curve is shaded with diagonal lines and labeled S.</p>	$S = \int_a^b f(x) \cdot dx$
 <p>A Cartesian coordinate system with a vertical y-axis and a horizontal x-axis. The origin is labeled '0'. Two curves are shown: $y=f_2(x)$ (upper) and $y=f_1(x)$ (lower). They intersect at x_0. The region between them from $x=a$ to $x=b$ is shaded with diagonal lines and labeled S. A tick mark on the y-axis is labeled $-m$.</p>	$S = \int_a^b (f_2(x) - f_1(x)) \cdot dx$

Формула Ньютона – Лейбница:

$$S = \int_a^b f(x) \cdot dx = F(b) - F(a)$$