

不定积分公式

$$\int \tan x \, dx = -\ln|\cos x| + C$$

$$\int \cot x \, dx = \ln|\sin x| + C$$

$$\int \frac{dx}{\cos x} = \int \sec x \, dx = \ln |\sec x + \tan x| + C$$

$$\int rac{dx}{\sin x} = \int \csc x dx = \ln|\csc x - \cot x| + C$$

$$\int sec^2x \, dx = \tan x + C$$

$$\int \csc^2 x \, dx = -\cot x + C$$

$$\int \sec x \tan x \, dx = \sec x + C$$

$$\int \csc x \cot x \, dx = -\csc x + C$$

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

$$\int \frac{1}{a^2+x^2} dx = \frac{1}{a} \arctan \frac{x}{a} + C (a > 0)$$

$$\int rac{1}{\sqrt{1-x^2}}\,dx=rcsin x+C$$

$$\int \frac{1}{\sqrt{a^2-x^2}} dx = \arcsin \frac{x}{a} + C (a>0)$$

$$\int rac{1}{\sqrt{x^2+a^2}}\,dx = \ln{(x+\sqrt{x^2+a^2})} + C$$
 (常见 $a=1$)

$$\int rac{1}{\sqrt{x^2-a^2}}\,dx = \ln|x+\sqrt{x^2-a^2}| + C\left(|x|>|a|
ight)$$

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

$$\int \sqrt{a^2-x^2}\,dx=rac{a^2}{2}rcsinrac{x}{a}+rac{x}{2}\sqrt{a^2-x^2}+C\ (a>|x|\geq 0)$$

$$\int \sin^2 x \, dx = rac{x}{2} - rac{\sin 2x}{4} + C \ \left(\sin^2 x = rac{1 - \cos 2x}{2}
ight)$$

$$\int \cos^2 x \, dx = \frac{x}{2} + \frac{\sin 2x}{4} + C \, \left(\cos^2 x = \frac{1 + \cos 2x}{2}\right)$$

$$\int \tan^2 x \, dx = \tan x - x + C \ (\tan^2 x = \sec^2 x - 1)$$

$$\int \cot^2 x \, dx = -\cot x - x + C \, \left(\cot^2 x = \csc^2 x - 1
ight)$$

$$\int a^x \, dx = rac{a^x}{\ln a} + C \; , a > 0 oxed{le } a
eq 1$$

附

$$d \tan x = \sec^2 x \, dx$$

$$d\cot x = -\csc^2 x \, dx$$

$$d \sec x = \sec x \tan x \, dx$$

$$d\csc x = -\csc x \cot x \, dx$$

$$rac{1}{a}d\arctanrac{x}{a}=rac{1}{a^2+x^2}\,dx$$

$$drcsinrac{x}{a}=rac{1}{\sqrt{a^2-x^2}}\,dx$$