不定积分公式

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$\int a^x \, dx = \frac{a^x}{\ln a} + C \ , a > 0$ 且 $a \neq 1$

附

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

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

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

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

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

$d\arcsin\frac{x}{a} = \frac{1}{\sqrt{a^2-x^2}}\,dx$