

常用积分运算

把书上常用的积分运算整合了一下，标红的公式经常会用到。

$\int k dx = kx + C$	$\int x^\alpha dx = \frac{x^{\alpha+1}}{\alpha+1} + C, \alpha \neq -1$
$\int \frac{1}{x^2-a^2} dx = \frac{1}{2a} \ln \left \frac{x-a}{x+a} \right + C$	$\int x^{-1} dx = \int \frac{1}{x} dx = \ln x + C$
$\int e^x dx = e^x + C$	$\int \frac{1}{\sqrt{x^2+a^2}} dx = \ln x + \sqrt{x^2+a^2} + C$
$\int a^x dx = \frac{a^x}{\ln a} + C$	$\int \frac{1}{\sqrt{x^2-a^2}} dx = \ln x + \sqrt{x^2-a^2} + C$
$\int \frac{1}{1+x^2} dx = \arctan x + C$	$\int \frac{1}{\sqrt{1-x^2}} dx = \arcsin x + C$
$\int \frac{1}{a^2+x^2} dx = \frac{1}{a} \arctan \frac{x}{a} + C$	$\int \frac{1}{\sqrt{a^2-x^2}} dx = \arcsin \frac{x}{a} + C$
$\int \cos x dx = \sin x + C$	$\int \cot x dx = \ln \sin x + C$
$\int \sin x dx = -\cos x + C$	$\int \tan x dx = -\ln \cos x + C$
$\int \frac{1}{\cos^2 x} dx = \tan x + C$	$\int \sec^2 x dx = \tan x + C$
$\int \frac{1}{\sin^2 x} dx = -\cot x + C$	$\int \csc^2 x dx = -\cot x + C$
$\int \sec x \tan x dx = \sec x + C$	$\int \sec x dx = \ln \sec x + \tan x + C$
$\int \csc x \cot x dx = -\csc x + C$	$\int \csc x dx = \ln \csc x - \cot x + C$