不定積分の公式

(1) $\displaystyle\int a\,dx = ax + C(a\text{ は定数})$

(2) $\displaystyle\int x^a\,dx = \frac{1}{a+1}x^{a+1} + C\ (a \neq -1)$

(3) $\displaystyle\int \frac{1}{x}\,dx = \log|x| + C$

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

(5) $\displaystyle\int \left(-\frac{dx}{\sqrt{a^2 - x^2}}\right) = \cos^{-1}\frac{x}{a} + C\ (a > 0)$

(6) $\displaystyle\int \frac{dx}{a^2 + x^2} = \frac{1}{a}\tan^{-1}\frac{x}{a} + C\ (a \neq 0)$

(7) $\displaystyle\int \frac{dx}{\sqrt{x^2 + a^2}} = \log\left(x + \sqrt{x^2 + a^2}\right) + C\ (a > 0)$

(8) $\displaystyle\int e^x\,dx = e^x + C$

(9) $\displaystyle\int a^x\,dx = \frac{a^x}{\log a} + C$

(10) $\displaystyle\int \log x\,dx = x(\log x - 1) + C$

(11) $\displaystyle\int \sin x\,dx = -\cos x + C$

(12) $\displaystyle\int \cos x\,dx = \sin x + C$

(13) $\displaystyle\int \tan x\,dx = -\log|\cos x| + C$

(14) $\displaystyle\int \frac{dx}{\tan x} = \log|\sin x| + C$

(15) $\displaystyle\int \frac{dx}{\cos^2 x} = \tan x + C$

(16) $\displaystyle\int \frac{dx}{\sin^2 x} = -\frac{1}{\tan x} + C$

(17) $\displaystyle\int \tan^2 x\,dx = \tan x - x + C$

(18) $\displaystyle\int \frac{dx}{\tan^2 x} = -\frac{1}{\tan x} - x + C$

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

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

(21) $\displaystyle\int \sin ax\sin bx\,dx = \frac{\sin(a-b)x}{2(a-b)} - \frac{\sin(a+b)x}{2(a+b)} + C$

(22) $\displaystyle\int \sin ax\cos bx\,dx = -\frac{\cos(a-b)x}{2(a-b)} - \frac{\cos(a+b)x}{2(a+b)} + C$

(23) $\displaystyle\int \cos ax\cos bx\,dx = \frac{\sin(a-b)x}{2(a-b)} + \frac{\sin(a+b)x}{2(a+b)} + C$

(24) $\displaystyle\int x\sin x\,dx = \sin x - x\cos x + C$

(25) $\displaystyle\int x\cos x\,dx = \cos x + x\sin x + C$

(26) $\displaystyle\int x^2\sin x\,dx = (2 - x^2)\cos x + 2x\sin x + C$

(27) $\displaystyle\int x^2\cos x\,dx = (x^2 - 2)\sin x + 2x\cos x + C$

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

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

(30) $\displaystyle\int \frac{dx}{\sin x} = \frac{1}{2}\log\frac{1 - \cos x}{1 + \cos x} + C = \log\frac{|\sin x|}{1 + \cos x} + C = \log\left|\tan\frac{x}{2}\right| + C$

(31) $\displaystyle\int \frac{dx}{\cos x} = \frac{1}{2}\log\frac{1 + \sin x}{1 - \sin x} + C = \log\frac{1 + \sin x}{|\cos x|} + C = \log\left|\frac{1}{\cos x} + \tan x\right| + C$

$\displaystyle\int \frac{dx}{\cos x} = \int \frac{dx}{\sin\left(x + \frac{\pi}{2}\right)} = \log\left|\frac{1 + \tan\frac{x}{2}}{1 - \tan\frac{x}{2}}\right| + C = \log\left|\tan\left(\frac{x}{2} + \frac{\pi}{4}\right)\right| + C$