Derivatives and Antiderivatives $f(x), g(x)$ are functions and C, n, k are constants (and $k \neq 0$).

Derivatives	Antiderivatives
$\frac{dC}{dx} = 0$	$\int 0dx = C$
$\frac{d}{dx}(kf(x)) = kf'(x)$	$\int kf(x)dx = k\int f(x)dx$
$\frac{d}{dx}(f(x) \pm g(x)) = f'(x) \pm g'(x)$	$\int (f(x) \pm g(x))dx = \int f(x)dx \pm \int g(x)dxdx$
$\frac{dx^n}{dx} = nx^{n-1}$	$\int x^n dx = \frac{x^{n+1}}{n+1} + C \ (n \neq -1)$
$\frac{de^x}{dx} = e^x, \ \frac{d\ln x}{dx} = \frac{1}{x}$	$\int e^x dx = e^x + C, \ \int \frac{dx}{x} = \ln\lvert x\rvert + C$
$\frac{d\sin x}{dx} = \cos x$	$\int \cos x dx = \sin x + C$
$\frac{d\cos x}{dx} = -\sin x$	$\int \sin x dx = -\cos x + C$
$\frac{d\tan x}{dx} = \sec^2 x$	$\int \sec^2 x dx = \tan x + C$
$\frac{d\cot x}{dx} = -\csc^2 x$	$\int \csc^2 x dx = -\cot x + C$
$\frac{d\sec x}{dx} = \sec x \tan x$	$\int \sec x \tan x dx = \sec x + C$
$\frac{d\csc x}{dx} = -\csc x \cot x$	$\int \csc x \cot x dx = -\csc x + C$

Chain rule and substitution technique

$$\frac{df(u(x))}{dx} = f'(u(x))u'(x) \Longleftrightarrow \int f'(u(x))u'(x)dx = f(u(x)) + C.$$

Derivatives	Antiderivatives
$\frac{d(ax+b)^n}{dx} = an(ax+b)^{n-1}$	$\int (ax+b)^n dx = \frac{(ax+b)^{n+1}}{a(n+1)} + C \ (n \neq -1, a \neq 0))$
$\frac{d[u(x)]^n}{dx} = n[u(x)]^{n-1}u'(x)$	$\int [u(x)]^n u'(x)dx = \frac{[u(x)]^{n+1}}{n+1} + C \ (n \neq -1)$
$\frac{de^{u(x)}}{dx} = e^{u(x)}u'(x), \ \frac{d\ln u(x)}{dx} = \frac{u'(x)}{u(x)}$	$\int e^{u(x)}u'(x)dx = e^{u(x)} + C, \ \int \frac{u'(x)}{u(x)} = \ln\lvert u(x)\rvert + C$
$\frac{d\sin(u(x))}{dx} = \cos(u(x))u'(x)$	$\int \cos(u(x))u'(x)dx = \sin(u(x)) + C$
$\frac{d\cos(u(x))}{dx} = -\sin(u(x))u'(x)$	$\int \sin(u(x))u'(x)dx = -\cos(u(x)) + C$
$\frac{d\tan(u(x))}{dx} = \sec^2(u(x))u'(x)$	$\int \sec^2(u(x))u'(x)dx = \tan(u(x)) + C$
$\frac{d\cot(u(x))}{dx} = -\csc^2(u(x))u'(x)$	$\int \csc^2(u(x))u'(x)dx = -\cot(u(x)) + C$
$\frac{d\sec(u(x))}{dx} = \sec(u(x))\tan(u(x))u'(x)$	$\int \sec(u(x))\tan(u(x))u'(x)dx = \sec(u(x)) + C$
$\frac{d\csc(u(x))}{dx} = -\csc(u(x))\cot(u(x))u'(x)$	$\int \csc(u(x))\cot(u(x))u'(x)dx = -\csc(u(x)) + C$