Integral Cheat sheet

Common Functions

Equation	Antiderivative
0	C
k	kx + C
kf(x) dx	$k \int f(x) dx$
$\int [f(x) \pm g(x)] dx$	$\int f(x) dx \pm \int g(x) dx$
e^x	$e^x + C$
a^x	$\left(\frac{1}{\ln(a)}\right)a^x + C$
$\frac{1}{x}$	$\ln x + C$
$\ln x$	$x(\ln x -1) + C$
$\log_b(x)$	$\frac{1}{\ln(b)}[x(\ln x -1)] + C$

Trigonometric Integrals

$$\int sin = -cos + C$$

$$\int tan = -\ln|cos| + C$$

$$\int sec = \ln|sec + tan| + C$$

$$\int cos = sin + C$$

$$\int cot = \ln|sin| + C$$

$$\int csc = \ln|csc - cot| + C$$

Abnormal Trigonometric Integrals

$$\int sec^{2} = tan + C$$

$$\int csc^{2} = -cot + C$$

$$\int tan = \ln|sec|$$

$$\int sec * tan = sec + C$$
$$\int csc * cot = -csc + C$$

Inverse Trigonometric Integrals (a is positive)

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

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

$$\int \frac{1}{x\sqrt{x^2 - a^2}} = \frac{1}{a}\operatorname{arcsec}(\frac{|x|}{a}) + C$$

Integration Rules

Power Rule
$$(n \neq -1)$$

$$\int x^n = \frac{x^{n+1}}{n+1} + C$$