Source: KBhMATH401SubIndex

1 | Intergration

Antiderivatives table

Function	Antidervative
x^n	$\frac{x^{n+1}}{n+1} + c, x \neq -1$
$af(x)$	$a * (f(x)dx)$
$\frac{1}{x}$	$\ln(\|x\|)$
$sin(at)$	$-\frac{cos(t)}{a}$
$cos(at)$	$\frac{sin(t)}{a}$
e^a	e^a
$\frac{1}{1+(ax)^2}$	$tan^-1(ax)$
$\frac{a}{\sqrt{k^2-(ax)^2}}$	$sin^-1(\frac{ax}{k})$
$\frac{-1}{\sqrt{k^2-(ax)^2}}$	$cos^-1(\frac{ax}{k})$
$ln(x)$	$xln(x) - x$
$\int f(x)g'(x)dx$	$f(x)g(x) - \int f'(x)g(x)dx$
Arc Length of function $f(x)$	$\sqrt{1 + f'(x)^2}dx$
Arc length of polar function $x(t), y(t)$	$\sqrt{x'(t)^2 + y'(t)^2}(dt)$
$r(\theta)$	$\int_a^B (r(\theta)^2)d\theta$

Also, fun other things

Function	Other Function
$sin^2\theta$	$\frac{1}{2}(1 - cos2\theta)$

With the reverse product rule, try to make f(x) the simpler derivative, and g(x) the simpler antiderivative

1.1 | Useful thing

- Intergration by Parts (reverse product rule) (the f(x)g'(x) rule above)
- u-Substitution (reverse chain rule)
- Compleeting the Square + arcsin/arctan
- Long divide, then intergrate