Set of Integrals

- $\int x^n dx = \frac{x^{n+1}}{n+1} + c$
- $\int e^x = e^x + c$
- $\int \frac{1}{x} dx = \ln|x| + c$
- $\int \sin x dx = -\cos x + c$
- $\int \cos x dx = \sin x + c$
- $\int e^{ax+b} = \frac{1}{a} e^{ax+b} + c$
- $\int \frac{1}{ax+b} dx = \frac{1}{a} \ln|ax+b| + c$
- $\int \sin(ax+b) dx = -\frac{1}{a} \cos(ax+b) + c$
- $\int \cos(ax+b) dx = \frac{1}{a} \sin(ax+b) + c$
- $\int (ax+b)^n dx = \frac{(ax+b)^{n+1}}{a(n+1)} + c$
- $\int \sec^2 x dx = \tan x + c$
- $\int \sec^2 (ax+b) dx = \frac{1}{a} \tan(ax+b) + c$
- $\int \cos ec^2 x dx = -\cot x + c$
- $\int \cos ec^2 (ax+b) dx = -\frac{1}{a} \cot(ax+b) + c$
- $\int \sec x \tan x dx = \sec x + c$
- $\int \sec(ax+b) \tan(ax+b) dx = \frac{1}{a} \sec(ax+b) + c$

Set of Integrals

Integration by Parts $\int u\frac{dv}{dx}dx = uv - \int v\frac{dv}{dx}dx$ (Be careful when assigning u and $\frac{dv}{dx}$)

Integral	n value	Method
$\int \sin^n xdx$	n = even	Use $\cos 2A = 1 - 2\sin^2 A$
$\int \cos^n xdx$	n = even	Use $\cos 2A = 2\cos^2 A - 1$
$\int \sin^n xdx$	n = odd	Use $\cos^2 A + \sin^2 A = 1$
$\int \cos^n xdx$	n = odd	Use $\cos^2 A + \sin^2 A = 1$

Integration by Substitution

Integral	Method
$\int \frac{f^{'}(x)}{f(x)}dx$	Use $u = f(x)$
$\int f^{'}(x)[f(x)]^n dx$	Use $u = f(x)$

Alternatively the integrals can be carried out by inspection!

Integral	Result
$\int \frac{f^{'}(x)}{f(x)}dx$	$\ln\lvert f(x)\rvert + c$
$\int f^{'}(x)[f(x)]^n dx$	$\frac{[f(x)]^{n+1}}{n+1} + c$

The differential result $\frac{d}{dx}(\sin^n x) = n\sin^{n-1} x\cos x$ may be needed in conjunction with the above when integrating

$\int \sin^n xdx$ where n = odd

The differential result $\frac{d}{dx}(\cos^n x) = -n\cos^{n-1} x\sin x$ may be needed in conjunction with the above when integrating

$\int \cos^n xdx$ where n = odd

If b > a then

$$\int_a^b f(x)dx = [F(x)]_a^b = -\int_b^a f(x)dx = -[F(x)]_b^a$$