

### *Useful Integrals*

$\int \cos(x) dx$	$\sin(x)$
$\int \sin(x) dx$	$-\cos(x)$
$\int x \cos(x) dx$	$\cos(x) + x \sin(x)$
$\int x \sin(x) dx$	$\sin(x) - x \cos(x)$
$\int x^2 \cos(x) dx$	$2x \cos(x) + (x^2 - 2) \sin(x)$
$\int x^2 \sin(x) dx$	$2x \sin(x) - (x^2 - 2) \cos(x)$
$\int e^{\alpha x} dx$	$\frac{e^{\alpha x}}{\alpha}$
$\int x e^{\alpha x} dx$	$e^{\alpha x} \left[ \frac{x}{\alpha} - \frac{1}{\alpha^2} \right]$
$\int x^2 e^{\alpha x} dx$	$e^{\alpha x} \left[ \frac{x^2}{\alpha} - \frac{2x}{\alpha^2} + \frac{2}{\alpha^3} \right]$
$\int \frac{dx}{\alpha + \beta x}$	$\frac{1}{\beta} \ln \alpha + \beta x $
$\int \frac{dx}{\alpha^2 + \beta^2 x^2}$	$\frac{1}{\alpha\beta} \tan^{-1}\left(\frac{\beta x}{\alpha}\right)$