

Derivatives and Antiderivatives (Summary of 4.9)

Differentiation		Antiderivatives/Integrals	
f	f'	f	F
cf	cf'	cf	cF
$f \pm g$	$f' \pm g'$	$f \pm g$	$F \pm G$
fg	$f'g + fg'$	1	x
$f(g(x))$	$f'(g(x))g'(x)$	x^n	$\frac{1}{n+1}x^{n+1}, n \neq -1$
$\frac{f}{g}$	$\frac{f'g - fg'}{g^2}$	$1/x$	$\ln x $
$f(x)^{g(x)}$	Use log diff.	e^x	e^x
c	0	a^x	$\frac{1}{\ln(a)}a^x$
x^n	nx^{n-1}	$\cos(x)$	$\sin(x)$
e^x	e^x	$\sin(x)$	$-\cos(x)$
a^x	$a^x \ln(a)$	$\sec^2(x)$	$\tan(x)$
$\ln x $	$\frac{1}{x}$	$\sec(x)\tan(x)$	$\sec(x)$
$\log_a(x)$	$\frac{1}{x} \cdot \frac{1}{\ln(a)}$	$\csc(x)\cot(x)$	$-\csc(x)$
$\sin(x)$	$\cos(x)$	$\csc^2(x)$	$-\cot(x)$
$\cos(x)$	$-\sin(x)$	$\frac{1}{\sqrt{1-x^2}}$	$\sin^{-1}(x)$
$\tan(x)$	$\sec^2(x)$	$\frac{1}{1+x^2}$	$\tan^{-1}(x)$
$\sec(x)$	$\sec(x)\tan(x)$		
$\csc(x)$	$-\csc(x)\cot(x)$		
$\cot(x)$	$-\csc^2(x)$		
$\sin^{-1}(x)$	$\frac{1}{\sqrt{1-x^2}}$		
$\tan^{-1}(x)$	$\frac{1}{1+x^2}$		