

Derivatives and Antiderivatives (Summary of 4.9)

General Formulas	
f	f'
cf	cf'
$f \pm g$	$f' \pm g'$
fg	$f'g + fg'$
$f(g(x))$	$f'(g(x))g'(x)$
$\frac{f}{g}$	$\frac{f'g - fg'}{g^2}$
$f(x)^{g(x)}$	Use log diff.

General Formulas	
f	F
cf	cF
$f \pm g$	$F \pm G$

Specific Functions	
f	f'
c	0
x^n	nx^{n-1}
e^x	e^x
a^x	$a^x \ln(a)$
$\ln x $	$\frac{1}{x}$
$\log_a(x)$	$\frac{1}{x} \cdot \frac{1}{\ln(a)}$
$\sin(x)$	$\cos(x)$
$\cos(x)$	$-\sin(x)$
$\tan(x)$	$\sec^2(x)$
$\sec(x)$	$\sec(x)\tan(x)$
$\csc(x)$	$-\csc(x)\cot(x)$
$\cot(x)$	$-\csc^2(x)$
$\sin^{-1}(x)$	$\frac{1}{\sqrt{1-x^2}}$
$\tan^{-1}(x)$	$\frac{1}{1+x^2}$

Specific Functions	
f	F
1	x
x^n	$\frac{1}{n+1}x^{n+1}, n \neq -1$
$1/x$	$\ln x $
e^x	e^x
a^x	$\frac{1}{\ln(a)}a^x$
$\cos(x)$	$\sin(x)$
$\sin(x)$	$-\cos(x)$
$\sec^2(x)$	$\tan(x)$
$\sec(x)\tan(x)$	$\sec(x)$
$\csc(x)\cot(x)$	$-\csc(x)$
$-\csc^2(x)$	$\cot(x)$
$\frac{1}{\sqrt{1-x^2}}$	$\sin^{-1}(x)$
$\frac{1}{1+x^2}$	$\tan^{-1}(x)$