

Math 141 Calculus Review Day 1

Some rules for finding derivatives

Rule		Example	
Function	Derivative	Function	Derivative
C	0	5	0
Cx	C	$5x$	5
x^n	nx^{n-1}	x^7	$7x^6$
e^x	e^x	$5e^x$	$5e^x$
$\ln x$	$\frac{1}{x}$	$5 \ln x$	$\frac{5}{x}$
$Cf(x)$	$Cf'(x)$	$5x^3$	$5 \cdot 3x^2$
$f(x) \pm g(x)$	$f'(x) \pm g'(x)$	$x^3 + x^{-1/3} - \frac{1}{7}x - 77$	$3x^2 - \frac{1}{3}x^{-4/3} - \frac{1}{7}$
$f(x)g(x)$	$f'(x)g(x) + f(x)g'(x)$	$x^3 \cdot \ln x$	$3x^2 \cdot \ln x + x^3 \cdot \frac{1}{x}$
$\frac{f(x)}{g(x)}$	$\frac{f'(x)g(x) - f(x)g'(x)}{[g(x)]^2}$	$\frac{x^3}{\ln x}$	$\frac{3x^2 \cdot \ln x - x^3 \cdot \frac{1}{x}}{[\ln x]^2}$
$f(g(x))$	$f'(g(x))g'(x)$	$(x^2 + 5x + 3)^7$	$7(x^2 + 5x + 3)^6(2x + 5)$
$\exp(g(x))$	$\exp(g(x)) \cdot g'(x)$	e^{x^2+5x+3}	$e^{x^2+5x+3} \cdot (2x + 5)$
$e^{g(x)}$	$e^{g(x)} \cdot g'(x)$		
$\ln(g(x))$	$\frac{1}{g(x)} \cdot g'(x) = \frac{g'(x)}{g(x)}$	$\ln(x^2 + 5x + 3)$	$\frac{2x + 5}{x^2 + 5x + 3}$