

Rules of differentiation

	<u>Function</u>	<u>Derivative</u>
	$f(x) = c$	$f'(x) = 0$
	$f(x) = a + bx$	$f'(x) = b$
	$f(x) = x^n$	$f'(x) = nx^{n-1}$
	$f(x) = e^x$	$f'(x) = e^x$
	$f(x) = \ln x$	$f'(x) = 1/x$
Sum:	$f(x) = g(x) + h(x)$	$f'(x) = g'(x) + h'(x)$
Product:	$f(x) = g(x)h(x)$	$f'(x) = g'(x)h(x) + g(x)h'(x)$
	$f(x) = cg(x)$	$f'(x) = cg'(x)$
Chain rule:	$f(x) = h(g(x))$	$f'(x) = h'(g(x))g'(x)$
Reciprocal:	$f(x) = \frac{1}{g(x)}$	$f'(x) = -\frac{g'(x)}{g(x)^2}$
Quotient:	$f(x) = \frac{h(x)}{g(x)}$	$f'(x) = \frac{h'(x)g(x) - h(x)g'(x)}{g(x)^2}$
Exponential:	$f(x) = e^{g(x)}$	$f'(x) = e^{g(x)}g'(x)$
Logarithm:	$f(x) = \ln(g(x))$	$f'(x) = \frac{g'(x)}{g(x)}$