

Differentiation rules

Constant Function Rule	$c' = 0$, where c is a constant
Power Rule	$(x^n)' = nx^{n-1}$
Linearity Rule #1	$(f(x) + g(x))' = f'(x) + g'(x)$
Linearity Rule #2	$(c \cdot f(x))' = c \cdot f'(x)$
Exponential Function Rule	$(a^x)' = a^x \cdot \ln a$
Product Rule	$(f(x) \cdot g(x))' = f'(x) \cdot g(x) + f(x) \cdot g'(x)$
Quotient Rule	$\left(\frac{f(x)}{g(x)}\right)' = \frac{f'(x) \cdot g(x) - f(x) \cdot g'(x)}{(g(x))^2}$
Chain Rule	$(f \circ g)'(x) = (f(g(x)))' = f'(g(x)) \cdot g'(x)$
Chain Rule (funny form)	$\frac{dz}{dx} = \frac{dz}{dy} \cdot \frac{dy}{dx}$
Inverse Function Rule	$(f^{-1})'(x) = \frac{1}{f'(f^{-1}(x))}$
Trig Functions	$\sin'(x) = \cos x$; $\cos'(x) = -\sin x$
Inverse Trig Functions	$\arcsin'(x) = \frac{1}{\sqrt{1-x^2}}$; $\arctan'(x) = \frac{1}{1+x^2}$