

# Def'n of Derivative

$$f'(x) = \lim_{\Delta x \rightarrow 0} \frac{f(x + \Delta x) - f(x)}{\Delta x}$$

## Basic Derivative Pairs

$f(x)$	$f'(x)$
$x^n$	$n x^{n-1}$
$e^x$	$e^x$
$\sin(x)$	$\cos(x)$
$\ln(x)$	$\frac{1}{x}$
$\sin^{-1}(x)$	$\frac{1}{\sqrt{1-x^2}}$

## Derivative Props

$$(fg)' = f'g + fg'$$

$$\left(\frac{f}{g}\right)' = \frac{f'g - fg'}{g^2}$$

$$\frac{d}{dx}(f(g(x))) = f'(g(x))g'(x)$$

$$(af + bg)' = af' + bg'$$