Functions Derivatives

Function	*Derivative*
$y = mu^n$ *(m, n ∈ Real number)*	$y' = mnu^{n-1}u'$
$y = \sqrt{u}$	$y' = \frac{u'}{2\sqrt{u}}$
$y = \frac{1}{u}$	$y' = -\frac{u'}{u^2}$
$y = u \cdot v$	$y' = u'v + v'u$
$y = \frac{u}{v}$	$y' = \frac{u'v - v'u}{v^2}$
Trigonometric Functions	*Derivative*
$y = \sin u$	$y' = u'\cos u$
$y = \cos u$	$y' = -u'\sin u$
$y = \tan u$	$y' = u'\sec^2 u$
$y = \csc u$	$y' = -u' \cdot \csc u \cdot \cot u$
$y = \sec u$	$y' = u' \cdot \sec u \cdot \tan u$
$y = \cot u$	$y' = -u' \cdot \csc^2 u$
Exponential & Logarithmic	*Derivative*
$y = e^u$	$y' = u' \cdot e^u$
$y = a^u$ *(a>0 ≠1)*	$y' = u' \cdot \ln a \cdot a^u$
$y = \ln \lvert u \rvert$	$y' = \frac{u'}{u}$
$y = \log_a \lvert u \rvert$ *(a>0 ≠1)*	$y' = \frac{u'}{\ln a \cdot u}$
Inverse Trigonometric	*Derivative*
$y = \sin^{-1} u$	$y' = \frac{u'}{\sqrt{1-u^2}}$
$y = \cos^{-1} u$	$y' = \frac{-u'}{\sqrt{1-u^2}}$
$y = \tan^{-1} u$	$y' = \frac{u'}{1+u^2}$
$y = \csc^{-1} u$	$y' = \frac{-u'}{\lvert u \rvert\sqrt{u^2-1}}$
$y = \sec^{-1} u$	$y' = \frac{u'}{\lvert u \rvert\sqrt{u^2-1}}$
$y = \cot^{-1} u$	$y' = \frac{-u'}{1+u^2}$