Short Table of Derivatives of $y=f(u)$ with respect to x, where u is a function of x

Functions, $y=f(u)$	Derivative of y with respect to x
$y=c$, where c is a constant.	$\frac{dy}{dx}=0$
$y=cu$, where c is a constant.	$\frac{dy}{dx}=c\frac{du}{dx}$
$y=u^p$, where p is a constant.	$\frac{dy}{dx}=pu^{p-1}\frac{du}{dx}$
$y=u+v$	$\frac{dy}{dx}=\frac{du}{dx}+\frac{dv}{dx}$
$y=uv$	$\frac{dy}{dx}=u\frac{dv}{dx}+v\frac{du}{dx}$
$y=\frac{u}{v}$	$\frac{dy}{dx}=\frac{v\frac{du}{dx}-u\frac{dv}{dx}}{v^2}$
$y=f(u)$, where u is a function of x.	$\frac{dy}{dx}=\frac{d\,f(u)}{du}\cdot\frac{du}{dx}$, the chain rule
$y=\log_a u$, $a>0$.	$\frac{dy}{dx}=\frac{1}{u}\log_a e\frac{du}{dx}$
$y=a^u$, $a>0$.	$\frac{dy}{dx}=a^u\log_e a\frac{du}{dx}$
$y=e^u$	$\frac{dy}{dx}=e^u\frac{du}{dx}$
$y=u^v$	$\frac{dy}{dx}=vu^{v-1}\frac{du}{dx}+u^v\log_e u\frac{dv}{dx}$
$y=\sin u$	$\frac{dy}{dx}=\cos u\frac{du}{dx}$
$y=\cos u$	$\frac{dy}{dx}=-\sin u\frac{du}{dx}$
$y=\tan u$	$\frac{dy}{dx}=\sec^2 u\frac{du}{dx}$
$y=\cot u$	$\frac{dy}{dx}=-\mathrm{cosec}^2 u\frac{du}{dx}$
$y=\sec u$	$\frac{dy}{dx}=\sec u\tan u\frac{du}{dx}$
$y=\mathrm{cosec}\, u$	$\frac{dy}{dx}=-\mathrm{cosec}\, u\cot u\frac{du}{dx}$
$y=\sin^{-1}u$	$\frac{dy}{dx}=\frac{1}{\sqrt{1-u^2}}\frac{du}{dx}$
$y=\cos^{-1}u$	$\frac{dy}{dx}=\frac{-1}{\sqrt{1-u^2}}\frac{du}{dx}$
$y=\tan^{-1}u$	$\frac{dy}{dx}=\frac{1}{1+u^2}\frac{du}{dx}$

Functions, $y = f(u)$	Derivative of y with respect to x
$y = \cot^{-1} u$	$\frac{dy}{dx} = -\frac{1}{1+u^2}\frac{du}{dx}$
$y = \sec^{-1} u$	$\frac{dy}{dx} = \frac{1}{\lvert u\rvert\sqrt{u^2-1}}\frac{du}{dx}$
$y = \operatorname{cosec}^{-1} u$	$\frac{dy}{dx} = -\frac{1}{\lvert u\rvert\sqrt{u^2-1}}\frac{du}{dx}$
$y = \sinh u$	$\frac{dy}{dx} = \cosh u\frac{du}{dx}$
$y = \cosh u$	$\frac{dy}{dx} = \sinh u\frac{du}{dx}$
$y = \tanh u$	$\frac{dy}{dx} = \operatorname{sech}^2 u\frac{du}{dx}$
$y = \coth u$	$\frac{dy}{dx} = -\operatorname{cosech}^2 u\frac{du}{dx}$
$y = \operatorname{sech} u$	$\frac{dy}{dx} = -\operatorname{sech} u \tanh u\frac{du}{dx}$
$y = \operatorname{cosech} u$	$\frac{dy}{dx} = -\operatorname{cosech} u \coth u\frac{du}{dx}$
$y = \sinh^{-1} u$	$\frac{dy}{dx} = \frac{1}{\sqrt{1+u^2}}\frac{du}{dx}$
$y = \cosh^{-1} u$	$\frac{dy}{dx} = \frac{1}{\sqrt{u^2-1}}\frac{du}{dx}$
$y = \tanh^{-1} u$	$\frac{dy}{dx} = \frac{1}{1-u^2}\frac{du}{dx}$
$y = \coth^{-1} u$	$\frac{dy}{dx} = \frac{1}{1-u^2}\frac{du}{dx}$
$y = \operatorname{sech}^{-1} u$	$\frac{dy}{dx} = -\frac{1}{u\sqrt{1-u^2}}\frac{du}{dx}$
$y = \operatorname{cosech}^{-1} u$	$\frac{dy}{dx} = -\frac{1}{\lvert u\rvert\sqrt{u^2+1}}\frac{du}{dx}$

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