\operatorname{sh}x=\frac{e^x-e^{-x}}{2} \operatorname{ch}x=\frac{e^x+e^{-x}}{2}

\operatorname{th}x=\frac{\operatorname{sh}x}{\operatorname{ch}x} = \frac {e^x - e^{-x}} {e^x + e^{-x}} = \frac{e^{2x} - 1} {e^{2x} + 1}

\operatorname{cth}x=\frac{1}{\operatorname{th}x} \operatorname{ch}^2t-\operatorname{sh}^2t=1

\operatorname{sh}(-x)=-\operatorname{sh}x \operatorname{ch}(-x)=\operatorname{ch}x

\operatorname{th}(-x)=-\operatorname{th}x

\operatorname{sh}(x \pm y)=\operatorname{sh}x\,\operatorname{ch}y \pm \operatorname{sh}y\,\operatorname{ch}x

\operatorname{ch}(x \pm y)=\operatorname{ch}x\,\operatorname{ch}y \pm \operatorname{sh}y\,\operatorname{sh}x

\operatorname{th}(x \pm y)=\frac{\operatorname{th}x \pm \operatorname{th}y}{1 \pm \operatorname{th}x\,\operatorname{th}y}

\operatorname{cth}(x \pm y)=\frac{\operatorname{cth}x\,\operatorname{cth}y \pm 1}{\operatorname{cth}y \pm \operatorname{cth}x}

(\operatorname{sh}x)^\prime=\operatorname{ch}x (\operatorname{ch}x)^\prime=\operatorname{sh}x

(\operatorname{th}x)^\prime=\frac{1}{\operatorname{ch}^2x}

\operatorname{Arsh}x=\ln(x+\sqrt{x^2+1})

\operatorname{Arch}x=\ln \left( x+\sqrt{x^{2}-1} \right);x\ge 1

\operatorname{Arth}x=\ln\left(\frac{\sqrt{1-x^2}}{1-x}\right)=\frac{1}{2}\ln\left(\frac{1+x}{1-x}\right)

\operatorname{Arcth}x=\ln\left(\frac{\sqrt{x^2-1}}{x-1}\right)=\frac{1}{2}\ln\left(\frac{x+1}{x-1}\right)

{d \over dx}\,\operatorname{arsh}\,x = { 1 \over \sqrt{x^2 + 1}}

{d \over dx}\,\operatorname{arch}\,x = { 1 \over \sqrt{x^2 - 1}}

{d \over dx}\,\operatorname{arth}\,x = { 1 \over 1 - x^2}

{d \over dx}\,\operatorname{arcth}\,x = { 1 \over 1 - x^2}

{d \over dx} \sin x = \cos x {d \over dx} \cos x  = -\sin x{d \over dx}\,\operatorname{tg}\,x = \sec^2 x = { 1 \over \cos^2 x} = \operatorname{tg}^2 x + 1{d \over dx}\,\operatorname{ctg}\,x = -\,\operatorname{cosec}^2\,x = { -1 \over \sin^2 x}{d \over dx} \arcsin x = { 1 \over \sqrt{1 - x^2}}{d \over dx} \arccos x = {-1 \over \sqrt{1 - x^2}}{d \over dx} \,\operatorname{arctg}\,x = { 1 \over 1 + x^2}{d \over dx} \,\operatorname{arcctg}\,x = {-1 \over 1 + x^2}

{d \over dx} \log_a x = \frac{log_a e} {x} {d \over dx} \ln x = {1 \over x}

{d \over dx} e^{f(x)} = f'(x)e^{f(x)} {d \over dx} e^x = e^x

{d \over dx} c^x = {c^x \ln c},\qquad c > 0

{d \over dx} \sqrt [n] {x} = {d \over dx} x^{1\over n} = {1 \over n} x^{1-n\over n} = \frac {1} {n \cdot \sqrt [n] {x^{n-1}}}

{d \over dx} \left({1 \over x^c}\right) = {d \over dx} \left(x^{-c}\right) = -{c \over x^{c+1}}

{d \over dx} x^c = cx^{c-1},

(f^g)' = \left(e^{g\ln f}\right)' = f^g\left(f'{g \over f} + g'\ln f\right),\qquad f > 0

(f (g(x)))' = f'(g(x))\cdot g'(x)