THE CALCULUS OF THE HYPERBOLIC FUNCTIONS

Using the basic fact that

$$\frac{d\left[e^{x}\right]}{dx} = e^{x}$$

And all usual rules of differentiation and integration , we can show:

$$f(x) \equiv \cosh x \equiv \frac{e^{x} + e^{-x}}{2}$$

then

$$f'(x) = \tfrac{1}{2}(e^{x} - e^{-x}) \equiv \sinh x$$

$$\boxed{\begin{aligned} f(x) &= \cosh x \\ f'(x) &= \sinh x \end{aligned}}$$

SIMILAR RESULTS MAY BE DERIVED FOR OTHER HYPERBOLIC FUNCTIONS

FUNCTION y	DERIVATIVE $\frac{dy}{dx}$
$\sinh x$	$\cosh x$
$\cosh x$	$\sinh x$
$\tanh x$	$\operatorname{sech}^2 x$
$\coth x$	$-\operatorname{cosech}^2 x$
$\operatorname{cosech} x$	$-\coth x \operatorname{cosech} x$
$\operatorname{sech} x$	$-\tanh x \operatorname{sech} x$