

## Hyperbolic Functions Proof

<p>Use the exponential definitions of <math>\sinh x</math> and <math>\cosh x</math> to show that:</p> $\cosh^2 x - \sinh^2 x = 1$	<p>Show that</p> $\tanh x = \frac{e^{2x} - 1}{e^{2x} + 1}$
<p>Find in terms of <math>e</math>:</p> $\sinh(3)$	<p>Hyperbolic sine can be defined exponentially as:</p> $\sinh x = \frac{e^x - e^{-x}}{2}$
<p>Use the exponential definitions to find the derivative of <math>\sinh x</math></p> $\frac{d}{dx}(\sinh x) = ?$	<p>Use the exponential definitions to find the integral of <math>\cosh x</math></p> $\int \cosh x \, dx = ?$
<p>Find the value of</p> $\cosh(5)$ <p>to 2 decimal places</p>	<p>Use the exponential definitions to find the derivative of <math>\cosh x</math></p> $\frac{d}{dx}(\cosh x) = ?$
<p>Hyperbolic cosine can be defined exponentially as:</p> $\cosh x = \frac{e^x + e^{-x}}{2}$	<p>(a) Find <math>\sinh(-x)</math> in terms of <math>\sinh(x)</math></p> <p>(b) Find <math>\cosh(-x)</math> in terms of <math>\cosh(x)</math></p>
<p>Use the exponential definitions to find the integral of <math>\sinh x</math></p> $\int \sinh x \, dx = ?$	<p>Hyperbolic tangent can be defined as:</p> $\tanh x = \frac{\sinh x}{\cosh x}$