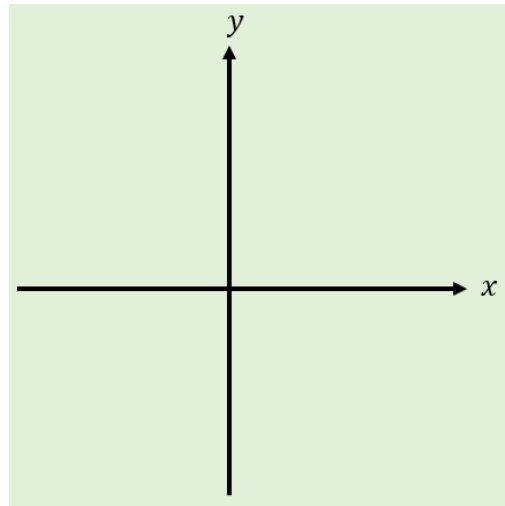


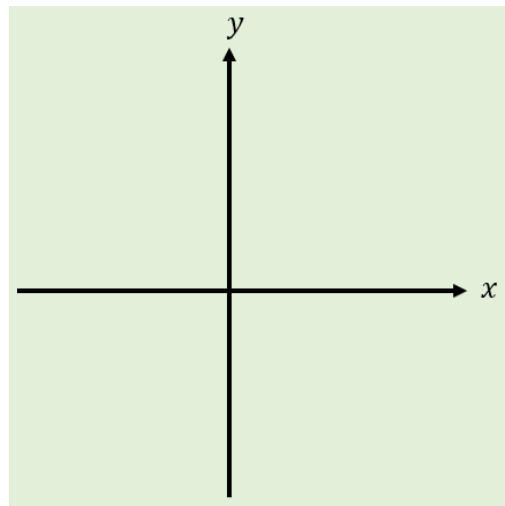
## 6B Inverse Hyperbolic Functions

1. Sketch hyperbolic function

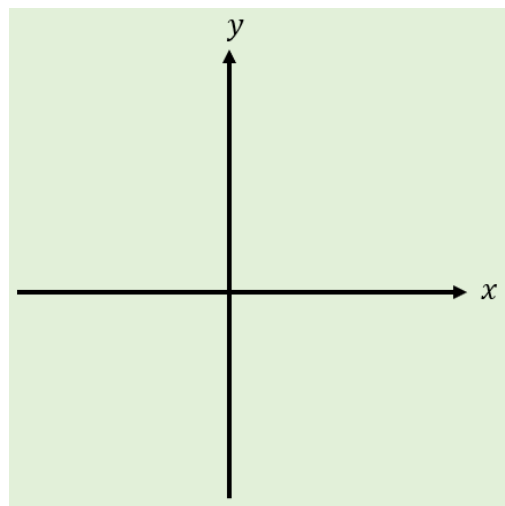
a)  $y = \operatorname{arsinh} x$



b)  $y = \operatorname{arcosh} x$



c)  $y = \operatorname{artanh} x$



2. Show that  $\operatorname{arsinh} x = \ln(x + \sqrt{x^2 + 1})$

3. Show that  $\operatorname{arcosh} x = \ln(x + \sqrt{x^2 - 1})$

4. Find an expression for  $\operatorname{artanh} x$  using logarithms

5. Express using natural logarithms:

a)  $\operatorname{arsinh} 1$

b)  $\operatorname{arcosh} 2$

c)  $\operatorname{artanh} \frac{1}{3}$