

**STEP/Hyperbolic Functions Q1 (16/6/23)**

Simplify  $\sinh(\cosh^{-1}2)$

**Solution**

Let  $\cosh^{-1}2 = a (> 0)$ ,

so that  $2 = \cosh a$

Then  $\sinh a = +\sqrt{\cosh^2 a - 1}$  [as  $a > 0$ ]

$$= \sqrt{3}$$