1 It is given that $I_n = \int_0 x^n \sinh x \, dx$, where n is a non-negative integer.

(a) Show that, for $n \geqslant 2$,

$$I_n = \cosh 1 - n \sinh 1 + n(n-1) I_{n-2}.$$ [3]

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(b) Find the exact value of I_2. [2]

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