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7. $$I_n = \int \cosh^n x \, dx \qquad n \geqslant 0$$

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

$$nI_n = \sinh x \cosh^{n-1} x + (n-1) I_{n-2}$$

(6)

(b) Hence find

$$\int \cosh^4 x \, dx$$

(4)

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Q7