

2840

Then

$$h_n(x) \equiv f_n(x) g_n(x) \rightarrow h(x)$$

Notice that

$$\begin{aligned} h_n(x) &= \sum_{j=0}^{2n} a_j x^j \sum_{k=0}^n b_k x^k \\ &= \sum_{r=0}^{2n} \left(\sum_{j=0}^r a_j b_{r-j} \right) x^r \\ &\quad + \sum_{\{0 \leq j, k \leq 2n : j+k > 2n\}} a_j b_k x^{j+k} \end{aligned}$$

$$\equiv \tilde{h}_n(x) + \gamma_n(x)$$