Solution (#313) Note

$$\text{coefficient of } x^n \text{ in } (1+x)^{2n} = \sum_{k=0}^{n} \left(\text{coefficient of } x^k \text{ in } (1+x)^n\right)\left(\text{coefficient of } x^{n-k} \text{ in } (1+x)^n\right)$$

and recall

$$\binom{n}{n-k} = \binom{n}{k}.$$