

Board Problem 1

Let b_n be the number of triangulations of a regular n -gon, using non-crossing diagonals only. Thus $b_3 = 1$, $b_4 = 2$, and so on. In class we have shown that the numbers b_n satisfy the recursion formula

$$b_n = \sum_{k=3}^n b_{n-k+2} \cdot b_{k-1} \quad \text{for } n \geq 4.$$

(Note that we must assume $b_2 = 1$ for this formula to work.) Express the numbers b_n in terms of the numbers a_n defined in Example 10 of Section 7.1. (Placing parentheses). Prove the validity of the formula by showing that the shift of indices you indicate takes the recursion formula for the numbers a_n in the book into the recursion formula for the numbers b_n above.