



OEIS sequence A169950 counts 0-1 polynomials,  $f(x)$ , by their *thickness*: the magnitude of the largest coefficient in the expansion of  $f(x)^2$ .

Consider the  $2^n$  monic polynomials  $f(x)$  with coefficients 0 or 1 and degree  $n$ . Sequence gives triangle read by rows, in which  $T(n, k)$  ( $n \geq 0$ ) is the number of such polynomials of thickness  $k$  ( $1 \leq k \leq n+1$ ).

On April 19, 2021 my Twitter bot @OeisTriangles tweeted an image in which that the parity of this triangle resembled the Sierpiński triangle, suggesting that there is a recursive structure in terms of the above rows.

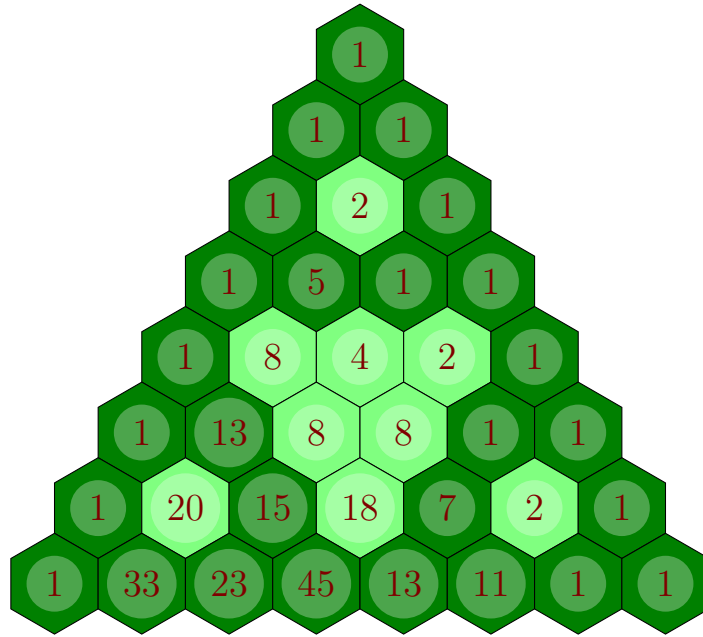


Figure 1: First eight rows of OEIS sequence A169950, where odd-valued cells are dark and even-valued cells are light.

**Question.** What is a recurrence for the values in this triangle?

**Related.**

1. What if  $\{-1, 0, 1\}$ -polynomials are considered?
2. What if the “ $m$ -thickness” is the largest coefficient when taken to the power  $m$ .
3. What if the sum of coefficients is considered?
4. How many 0-1 polynomials  $f(x)$  have  $\text{thickness}(f(x))+1 = \text{thickness}(xf(x)+1)$ ?  $\text{thickness}(f(x))+2 = \text{thickness}(xf(x)+1)$  What is the asymptotic density of such 0-1 polynomials as a function of degree?

**References.**

David Speyer, Math Stack Exchange answer.