Scan A5321

J Longyear,
W T Trotter

NJAS 3 pages

Correspondence

3 seqs

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A72925, A2845
→ A5321

Dear Neil, 11 July 84

I just noticed your offer in "Integer Sequences" of supplements. Please do put me on your list.

① I WISH that whenever feasible you had given recursions or closed forms rather than just names. Such as – all sequences listed under polynomials, Chebyshev, Hermite, or Legendre have simple binomial expressions or some such.
(e.g. 825 is $(n-1)\,2^{2n-3}$ & 799 is $\binom{n}{2}\,2^{n-1}$
& 834 is $n!\binom{n}{2}$)

A2696

There is one exception to this – In 1921 I don't get a formula – are you SURE 77520 is the right #?

Yes!

② In 435, the next two terms are 888 and 1944.

A72925

③ Tom Trotter gives a nice sequence

a_n 1, 1, 2, 10, 122, 3346

n 0, 1, 2, 3, 4, 5 etc. A5321

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These are the # of upper-triangular 0-1 matrices of order n with no row or column all zeros. To get more #'s $s_0 = 1$ and $s_k = (2^k-1)\,s_{k-1} + (-1)^k$

and $a_n = \sum_{k=0}^{n} \binom{n}{k} s_k$.

Thanks again for an invaluable book.

Judith.

Judith Longyear

P.S. I forgot!

1, 2, 4, 4, 8, 24, 32, etc. from Béla Bollobas.

omit

How many permutations π on {1, 2, ..., n+1} give the following as a permutation on {1, ..., n}

$j \to |\pi(j+1) - \pi(j)|$

These #'s are always divisible by 8 past the first few, but I don't any more about them.

Longyear, Trotter, NJAS

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S321

ROMA SPARITA
di E. Roesler Franz (1845-1907)
VIA DEI PENITENZIERI
Museo di Roma

5/19/91

Dear Tom, Judith Longyear once sent me your sequence
1, 1, 2, 10, 122, 3346, ...,
the # of upper △ (0,1) - matrices. Is there a reference for this? (I am finally revising the sequence book) Best regards

Neil

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da fotocolor Kodak Ektachrome

30 May 91

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Neil,

Perhaps I'm confused. One counting problem that I'm familiar with which sounds similar is # of upper-triangular 0-1 matrices with no empty rows or columns.

$n = 1$ $\quad \begin{array}{|c|}\hline 1 \\ \hline\end{array} \qquad (1)$

$n = 2$ $\quad \begin{array}{|c|c|}\hline 1 & 1 \\ \hline & 1 \\ \hline\end{array} \qquad \begin{array}{|c|c|}\hline 1 & 0 \\ \hline & 1 \\ \hline\end{array} \qquad (2)$

$n = 3$ $\quad \underset{8}{\begin{array}{|c|c|c|}\hline 1 & * & * \\ \hline & 1 & * \\ \hline & & 1 \\ \hline\end{array}} \qquad \underset{2}{\begin{array}{|c|c|c|}\hline 1 & 1 & * \\ \hline & 0 & 1 \\ \hline & & 1 \\ \hline\end{array}} \qquad (10)$

etc.

Is this what you mean? If so it's due (so I think) to T. L. Greenough and is in his unpublished Ph.D. thesis from Dartmouth ~1975

Incidentally the formula is

$$\sum_{k=0}^{n} \binom{n}{k} S_k \quad \text{where } S_0 = 1 \text{ and}$$

$$S_{k+1} = (2^{k+1} - 1) S_k + (-1)^{k+1}$$

P. S. See you in New Jersey next year.

so $S_1 = 0$ $\quad S_2 = 1$ $\quad S_3 = 6$ etc.

Best regards, Tom T