

New & good (on back)

A6542, A 1181

The Fibonacci Association



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Dear Neil,

A 1181

April 25, 1977

Re your Sequence N652 } BAXTER

PERMUTATIONS.

I have not the reference to see how they are actually defined but I do know 1, 2, 6, 22, 92, 422, 2074 and 10754 are the row sums across the Generalized Binomial Coefficient Array obtained from 1, 4, 10, 20, 35, 56, 84, ... the third column of Pascal's left adjusted triangle (ones are in the zeroth column!!)

$$\begin{bmatrix} m \\ n \end{bmatrix} = \frac{Q_m Q_{m-1} \dots Q_{m-n+1}}{Q_n Q_{n-1} \dots Q_1}$$

$$\begin{bmatrix} m \\ 0 \end{bmatrix} = \begin{bmatrix} m \\ m \end{bmatrix} = 1$$

with $\frac{1}{(1-x)^4} = \sum_{n=1}^{\infty} Q_n X^{n-1}$.

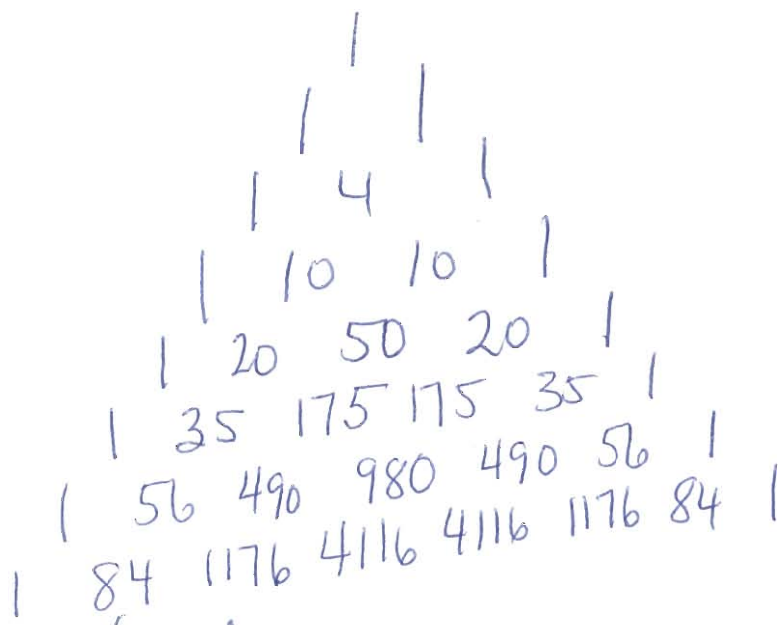
If you could be kind enough to send along a definition of the Baxter Permutations from Mathematical Algorithms MA4 2-25-67 then perhaps I could verify this. Sincerely, Verner

(over)

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f₉₁

~~Ar~~



$\Sigma 1$
 $\Sigma 2$
 $\Sigma 6$
 $\Sigma 22$
 $\Sigma 92$
 $\Sigma 422$
 $\Sigma 2074$
 $\Sigma 16754$



1181

$\binom{n}{3}$

new!
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$$n \begin{array}{|c} 0 & 1 & 2 & 3 & 4 & 5 \end{array}$$

$$n! \begin{array}{|c} 1 & 1 & 2 & 6 & 24 & 120 \end{array}$$

$$Q_n \begin{array}{|c} 1 & 4 & 10 & 20 & 35 & 56 \end{array}$$

$$\binom{3}{0} \quad \binom{3}{1} \quad \binom{3}{2} \quad \binom{3}{3}$$

$$\binom{4}{0} \quad \binom{4}{1} \quad \binom{4}{2} \quad \binom{4}{3} \quad \binom{4}{4}$$

$$\frac{4!}{3!1!} = \frac{24}{6 \cdot 1} = 4$$

$$Q_1 = 1$$

$$\begin{bmatrix} m \\ 1 \end{bmatrix} = Q_m$$

$$\begin{bmatrix} m \\ 2 \end{bmatrix} = \frac{Q_m Q_{m-1}}{Q_2 Q_1} = \frac{Q_m Q_{m-1}}{4}$$

$$\begin{bmatrix} m \\ 2 \end{bmatrix} = \frac{Q_m Q_{m-1}}{4} = \frac{1}{4} \binom{m}{3} \binom{m-1}{3}$$

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$$n \gg 4$$

Ref VETH

- $c_1 = 1.10041156\dots$
- $c_2 = 1.0000000771923332183\dots$
- $c_3 = 0.82260038\dots$
- $c_4 = 0.67424266\dots$
- $c_5 = 0.56924054\dots$

The exact values of the cons

$c_2 =$

where

and

is the solution to

(6) $r \theta_2'(r) = \theta_2(r), \quad 0 < r < 1;$

(5) $= 0.60653072377180785899\dots$

$$r = \frac{1}{\sqrt{e}} \left[1 + \frac{e^{2\pi^2}}{4\pi^2} - \frac{64\pi^6 - 48\pi^4 + 8\pi^2}{e^{4\pi^2}} + \dots \right]$$

(4)

(3)

