new & good (on back)

A6542, A1181

The Fibonacci Association

Dear Neil,

A1181 } 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!!

$$\begin{bmatrix} m \\ n \end{bmatrix} = \frac{Q_m Q_{m-1} \cdots Q_{m-n+1}}{Q_n Q_{n-1} \cdots Q_1} \qquad \begin{bmatrix} m \\ 0 \end{bmatrix} = \begin{bmatrix} m \\ m \end{bmatrix} = 1$$

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

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, Vern

Please respond!

(over)

f91 ✓

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Δ

1
1 1
1 4 1
1 10 10 1
1 20 50 20 1
1 35 175 175 35 1
1 56 490 980 490 56 1
1 84 1176 4116 4116 1176 84 1

Σ 1
Σ 2
Σ 6
Σ 22
Σ 92
Σ 422
Σ 2074
Σ 10754

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$\binom{n}{3}$

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n	0	1	2	3	4	5	
$n!$	~~1~~	1	2	6	24	120	
Q_n	~~1~~	1	4	10	20	35	56

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

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

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

$$Q_1 = 1$$

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

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

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$n \geqslant 4$

Ref VEH

$$c_1 = 1.10041156\ldots,$$

$$c_2 = 1.000000007719233321 83\ldots,$$

$$c_3 = 0.82260038\ldots,$$

$$c_4 = 0.67424266\ldots,$$

$$c_5 = 0.56924054\ldots,$$

.

The exact values of the cons

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Verner E Hoggatt, Jr.,
letter
3 sides

$c_2 =$ (3)

where

(4)

and

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

$$= 0.60653072377180785899\ldots \qquad (5)$$

is the solution to

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