Scan

A6483
etc

Dennis Kluk
and NJAP

Correspondence

A4255 A2050
A154
→A6483
~~A6484~~
A6489

DENNIS S. KLUK
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SKOKIE, ILL
60077

8 AUG 1979

N. J. A. SLOANE
MATHEMATICS RESEARCH CENTER
BELL TELEPHONE LABORATORIES, INC.
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07974

DEAR SIR,

I have spent many hours studying your sequences in "A HANDBOOK OF INTEGER SEQUENCES". Enclosed are some more sequences that you may wish to include in an upcoming revision. There are also several corrections to published sequences.

Any revisions to your valuable handbook that you would like to send me would be greatly appreciated.

As I update my collection of sequences I'll send more, if you don't object.

Sincerely
Dennis Kluk

2050

$\sum_{k=1}^{\infty} \frac{k^N}{2^k}$ 1, 2, 6, 26, 150, 1082, 9366, 94586, 1091670, 14174522, 204495126, 3245265746

CORRECTION TO #710
... 1834, 17382, 19586 6, ... 154

1, 2, 8, 35, 205, 1224, 8169, 58980, 440312, 3424506, 27412679
(NUMBER OF TWIN PRIME PAIRS $< 10^N$)

1, 2, 11, 101, 13, 137, 9091, 9901, 909091, 5882353, 52579, 27961, 8779, ...
(LARGEST FACTOR OF $10^N + 1$)

1, 3, 3, 5, 13, 23, 11, 23, 683, 419, 19, 1733, ...
(LARGEST FACTORS OF CULLEN NUMBERS, $N \cdot 2^N + 1$)

1, 3, 4, 5, 6, 8, 10, 12, 15, 16, 17, 20, 24, 30, ...
(CONSTRUCTABLE REGULAR POLYGONS - BEILER p183)

1, 3, 4, 9, 19, 34, 64, 125, 251, 462, 925, 1729, 3459, 6554, 13109, 25125, 50251, 97222, ...
(NUMBERS OF THE FORM $3K < 2^N$, THUS HAVING $\leq N$ BINARY BITS, WITH AN EVEN NUMBER OF 1's.)

~~6481~~ 6483

$2^N S_N + 1$: 1, 3, 5, 17, 49, 161, 513, 1665, 5377, 17409, 56321, 182273, 589825, 1908737, 6176769, 1998481, 64684033, 209321985, 677380097, 2192048129, 7093616641 ...

~~X~~ 1, 3, 6, 55, 66, 171, 595, 666, 3003, 5995, 8778 (PALINDROMIC TRIANGLES) 15051,

1, 3, 7, 5, 11, 103, 71, 661, 269, 329891, 3991681, 2834329, 75024347, 3790360487, 46271341, ... (LARGEST DIVISORS OF N!+1)

$N(N+1)(N^{**}-3N+6)/8$

$N(N+1)(N^2-3N+6)/8$: 1, 3, 9, 25, 60, 126, 238, 414, 675, 1045, 1551, 2223, 3094, 4200, 5580, 7276, 9333, 11799, 14725, 18165, ... (PARTIAL SUMS OF N^{TH} N-GONAL NUMBERS).

Extended A4255 ✓ Name

Ref KL1

$\frac{N(N+1)(N^2-3N+5)}{6}$: 1, 3, 10, 30, 75, 161, 308, 540, 885, 1375, 2046, 2938, 4095, 5565, 7400, 9656, 12393, 15675, 19570, ... (N^{IH} N-GONAL PYRAMID) ✓ Ref KL1.

extended A6484

$(2^{(2N+1)}+1)/3$: 1, 3, 11, 171, 43691, 2863311531, ... 6485

extended ✓

6486 1, 3, 13, 17, 71, 43, 4733, 241, 757, 9091, 1806113, 178322008965 1, 1803647 (LARGEST FACTOR OF $N^N - 1$) 6486

$N^{**}N - 1$.

No ref

(5809)

$\binom{3N}{N} = \binom{3N}{2N}$ 1, 3, 15, 84, 495, 3003, 18564, 116280, 735471, 4686825, 30045015, 193536720, 1257677700, 8122425444

6487

1, 3, 13, 1253, 218201, ...
(EGYPTIAN FRACTION FOR $\sqrt{2}$)

1, 3, 15, 3814279, ...
(NEAREST INTEGER TO $1, e, e^e, e^{e^e}, e^{e^{e^e}}$ ....)

$2^N + N^2$ 1, 3, 17, 57, 177, 593, 2169, 8361, 32993, 131361, ...
(FOR ODD N), 524649, 2097593, 8389137, 33555057, ...

$2^N \cdot N^2 + 1$ 1, 3, 17, 73, 257, 801, 2305, 6273, 16385, 41473
102401, 247809, 589825, 1384449, 3211265, 7372801
16777217, 37879809, 84934657, 189267969, ...

$(N+1)^{(N+1)} - N^N$ 1, 3, 23, 229, 2869, 43531, 776887, 15953673
370643273, 9612579511, ...

$(x^{13} - x)/2730$ 1, 3, 584, 24582, 447144, 4784137, 35490480,
201375756, 931086384, 3663003663

$N! + 1 = m^2$ 1, 4, 5, 7, ...

$N \cdot 3^N + 1$ 1, 4, 19, 82, 325, 1216, 4375, 15310, 52489, 177148, 590491, 1948618, 6377293, ...

X 20726200, 66961567, 215233606, 688747537, 2195382772, 6973568803

X 1, 4, 21, 143, 1061, 8363, 68906, 586081, 5096876, 45086079, 404204977, 3663002302, 33489857205
(NUMBER OF PRIMES WITH N DIGITS)

$\frac{10^N}{LN\ 10^N}$ X 1, 4, 22, 145, 1086, 8686, 72382, 620421, 5428681, ...
(PRIME NUMBER THEORY)

$\pi(10^N)$ 1, 4, 25, 168, 1229, 9592, 78498, 664579, 5761455, 50847534, 455052511, 4118054813, 37607912018...
(NUMBER OF PRIMES $< 10^N$)

X 1, 4, 762559748989
$1, 2^2, 3^{3^3}, 4^{4^4}$...

X 15, 3, 11, 503, 97, 8179, 4679, 8737, ...
(LARGEST FACTOR OF ODD $(2^N - N)$)

X 1, 5, 7, 11, 197, 67, 131, 137
CLARGEST FACTOR OF $2^N + 3$

CORRECTION TO #1613
..., 256443711677, 4787495 47, 78143369

CORRECTION TO #1628.
...) 92608862041, 59799107, 1143707681, ...

1, 5, 61, 277, 2659, 967, 4241723, ...
[LARGEST FACTORS OF |EN|)

$(N^5-N)/5$ 1, 6, 48, 204, 624, 1554, 3360, 6552,
11808, 19998, ...

$N \cdot 2^N - 1$ 1, 7, 23, 63, 159, 383, 895, 2047, 4607,
10239, 22527,

$(p^{P+1}-1)/(P-1)$ 1, 7, 40, 3906, 960800, 313842837672

$\phi(N) = \phi(N+2)$ 1, 7, 70, 308, 572, 635, 728, 910, 1015,
1330, 2132, 2170, 2590, 2695, 4292, 4338,
5950, 9100
[AMM 56, 22, 49] 494 but he had it wrong!

$2^N - N^2$ 1, 7, 79, 431, 1927, 8023, 32543, 130783,
[ODD NUMBERS] 523927, 2096711, 8388079, ...

~~$(N^5-5)/30$ 1, 8, 34, 104, 259~~

$\sum_{1}^{N} T_m^3$ 1, 28, 244, 1244, 4619, ...
$N(N+1)(N+2)(15N^4+60N^3+63N^2+6N-4)/840$
(SUMS OF CUBES OF TRIANGLES)

$\sum_{1}^{N} T_m^2$ 1, 10, 46, 146, 371, ...,
$N(N+1)(N+2)(3N^2+6N+1)/60$
(SUMS OF SQUARES OF TRIANGLES)

1, 11, 37, 271, 4649, 513239, 265371653,
5363222357, 111111111111111111,
11111111111111111111111111, 7784383939397
(LARGEST FACTORS OF REPUNIT NUMBERS,
$(10^P-1)/9$, WITH A PRIME NUMBER OF DIGITS)

2, 3, 5, 11, 101
13, 17, 37, 79, 107, 113, 149, 157, 167, 179, 199
PRIMES WHOSE REVERSALS ARE ALSO PRIMES—
LEAST OF PAIR — SMA 11 274 45

2961 1, 14, 206, 957, 1334, 1364, 1634, 2685, 2974,
4364, ...
$N \ni \sigma_1(N) = \sigma_1(N+1)$ MATH OF COMP. 27 676 73

$(N-1)^{(N+1)}$ 1, 16, 243, 4096, 78125, ...

$N^{(N-1)}-(N+1)^N$ 1, 17, 399, 7849, 162287, 3667649, 91171007,
2486784401, 74062575399, ...

X 1, 26, 264, 307, 836, 2285, 2636, 22865, 24846, 30693 ...
(NON-PALINDROMIC ROOTS OF PALINDROMIC SQUARES)

X 1, 29, 541, 7919, 104729, 1299709, 15485863 ...
THE 10^N-TH PRIME

$\sum T_m^4$ 1, 82, 1378, 11378, 62003, ...
X $N(N+1)(N+2)(35N^6+210N^5+410N^4+240N^3-49N^2-18N+12)/5040$
SUMS OF FOURTH POWERS OF TRIANGLES

$N^{(N+2)}-(N+2)^N$ 1, 118, 2800, 61318, 1417472, 35570638, 973741824, 29023119 18, ...
X

$\sigma_1(N)=3N$ ✓ 1, 120, 672, 523776, 45981824 0, 1476304896, 5100118 0160

✓ 1, 945, 1575, 2205, 2835, 3465, 4095, 4725, 5355, 5775, 5985, 6435, 6615, 6825, 7245, 7425, 7875, 8085, 8415, 8505, 8925, 9135, 9555, 9765, ... 223839 ...
(ODD ABUNDANT NUMBERS)

(over)

LAST MINUTE ADDITIONS

6489 1, 11, 13, 17, 23, 37, 47, 53, 67, 73, 103, 107, 157, 173, 233, 257, 263, 277, ...

N-6, N, N+6 are all primes, J. Mathematics Teacher 62, 471, '69

MT2

6488 1, 7, 12, 18, 32, 59, 81, 105, 132, 228, 265, 284, 304, 367, 389, 435, 483, 508, 697, 726, 944, ...

MARTIN GARDNER, MATHEMATICAL MAGIC SHOW, p55, 1977

N! has a square number of digits

312
675 8379

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September 4, 1979

Mr. Dennis Kluk
5019 W. Mulford
Skokie, Illinois 60077

Dear Mr. Kluk:

Thank you very much for your letter of 8 August. Naturally I am delighted to receive your comments and new sequences. I am planning a major revision of the Handbook in the next year or two, and your contributions will be extremely valuable. I do have some questions about your letter however. I have tried to make the entries as accurate as possible, and so I must ask you to quote some reference or other authority for your sequences. For example, the first sequence is

$$\sum_{i=1}^{\infty} \frac{k^n}{2^k},$$

and begins 1,2,6,26,... . What is your source? How reliable are the numbers you gave me? How can I generate further terms? Similarly for the other sequences. As you can tell, I am a little skeptical of hand-written numbers. It is just too easy to make mistakes.

I enclose a copy of Supplement I, the only one issued so far, as well as a couple of other things that may interest you.

Looking forward to hearing from you, I am,

Yours sincerely,

N. J. A. Sloane

MH-1216-NJAS-mv

Enc.
As above