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E. L. Tan,

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DEPARTMENT OF MATHEMATICS
COLLEGE OF SCIENCE
UNIVERSITY OF THE PHILIPPINES
Diliman, Quezon City

03 February 1992

N. J. A. Sloane
Room 2C-376
AT & Bell Laboratories
Murray Hill, NJ 07974
U. S. A.

Re: Integer Sequences

Leave it

Dear Prof. Sloane,

I have read the call for new sequences in the October 1991 issue of The American Mathematical Monthly. May I share the sequence
$(u_n) = (1,2,4,7,11,17,27,44,72,117,189,305,493,798,\ldots)$
which comes from the combinatorial sum

$$\sum_{n=0}^{\left[\left[\frac{n+2}{4}\right]\right]} \binom{n+2-2h}{2h}, \quad n \geq 1.$$

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It satisfies the difference equation

$$\Delta^2 u_{n+2} = u_n, \quad n \geq 1,$$

and has a closed form given by

$$u_n = \frac{1}{2\sqrt{5}}\left(\frac{1+\sqrt{5}}{2}\right)^{n+3} - \frac{1}{2\sqrt{5}}\left(\frac{1-\sqrt{5}}{2}\right)^{n+3} - \frac{1}{\sqrt{3}}\sin\frac{n\pi}{3}, \quad n \geq 1.$$

References:

(1) Tan, E.L., On the Cycle Graph of a Graph and Inverse Cycle Graphs, Ph.D. Dissertation (unpublished). University of the Philippines, Diliman, Quezon City, 1987.

(2) Tan, E.L., *On Fibonacci Numbers and Cycle Graphs*, Matimyas Matematika (Published by the Mathematical Society of the Philippines), Vol. 13, No. 2, May 1990, 1-4.

Very truly yours,

Evelyn L. Tan

EVELYN L. TAN
Associate Professor