A correction on the paper “A Note on Bi-Periodic Leonardo Sequence”

P. M. M. Catarino and E. V. P. Spreatico

The generating function in Theorem 3 of our work [1] was computed incorrectly. Below we provide the new version of Theorem 3 including the corrections to be made in its proof. The authors are grateful to Carlos M. Da Fonseca [2] for identifying this error.

The corrected version of Theorem 3 in [1] is as follows.

**Theorem 3** The generating function for bi-periodic Leonardo numbers is given by

\[ \sum_{n=0}^{\infty} GLe_n x^n = \frac{(2a - 1) + 2a(b - 1)x + (2 - a(b + 2))x^2 + 2ax^3 - x^4}{(1 - x)(1 - (ab + 2)x^2 + x^4)}. \] (20)

The expression on line 4 page 9 in [1] should be read as

\[ (1 - (ab + 2)x^2 + x^4)g(x) = (2ab - 1)x + (ab + 1)x^3 + ab \sum_{m=2}^{\infty} x^{2m+1}. \]

Then for

\[ F(x) = \sum_{n=0}^{\infty} GLe_n x^n = h(x) + g(x), \]

we obtain

\[ (1 - (ab + 2)x^2 + x^4)F(x) = \]

\[ = (2a - 1) + (2ab - 1)x + (-2a + ab + 1)x^2 + (ab + 1)x^3 + ab \sum_{n=4}^{\infty} x^n = \]

\[ = (2a - 1) + (2ab - 1)x + (-2a + ab + 1)x^2 + (ab + 1)x^3 + \]

\[ + ab \left( \frac{1}{1 - x} - 1 - x - x^2 - x^3 \right) \]

\[ = \frac{(2a - 1) + 2a(b - 1)x + (2 - a(b + 2))x^2 + 2ax^3 - x^4}{1 - x}. \]
References


Paula Maria Machado Catarino
Department of Mathematics,
University of Trás-os-Montes e Alto Douro
5001-801, Vila Real, Portugal.
pctatarin@utad.pt

Elen Viviani Pereira Spreafico
Institute of Mathematics,
Federal University of Mato Grosso do Sul
79070-90, Campo Grande, Brazil.
elen.spreafico@ufms.br

Please, cite to this paper as published in
https://doi.org/10.52737/18291163-2024.16.8-1-2