

ON THE PARTIAL FINITE ALTERNATING SUMS OF
RECIPROCAL OF BALANCING AND
LUCAS-BALANCING NUMBERS

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AND

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Abstract

In this note, the finite alternating sums of reciprocals of balancing and Lucas-balancing numbers are considered and several identities involving these sums are deduced.

Keywords: balancing numbers, Lucas-balancing numbers, partial sums, reciprocal, floor function.

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REFERENCES

- [1] A. Behera and G. K. Panda, *On the square roots of triangular numbers*, *Fibonacci Quart.* **37** (1999) 98–105.
- [2] Y. Choo, *On the reciprocal of sums of products of Pell numbers*, *Int. J. Math. Anal.* **12** (2018) 595–602.
doi:10.12988/ijma.2018.81074
- [3] S.H. Holliday and T. Komatsu, *On the sum of reciprocal generalized Fibonacci numbers*, *Integers* **11** (2011) 441–455.
doi:10.1515/integ.2011.031
- [4] E. Kilic and T. Arıkan, *More on the infinite sums of reciprocal Fibonacci, Pell and higher order recurrences*, *Appl. Math. Comput.* **219** (2013) 7783–7788.
doi:10.1016/j.amc.2013.02.003
- [5] T. Komatsu and G.K. Panda, *On several kinds of sums of balancing numbers*, *Ars Combin.* (to appear), arXiv:1608.05918.

- [6] R. Liu and A.Y. Wang, *Sums of products of two reciprocal Fibonacci numbers*, Adv. Differ. Equ. **2016** (2016) Article ID 136.
doi:10.1186/s13662-016-0860-0
- [7] H. Ohtsuka and S. Nakamura, *On the sum of reciprocal Fibonacci numbers*, Fibonacci Quart. **46/47** (2008/2009) 153–159.
- [8] G.K. Panda, *Some fascinating properties of balancing numbers*, Congr. Numer. **194** (2009) 185–189.
- [9] A.Y. Wang and P. Wen, *On the partial finite sums of the reciprocals of the Fibonacci numbers*, J. Inequal. Appl. **2015** (2015) Article ID 73.
doi:10.1186/s13660-015-0595-6
- [10] A.Y. Wang and T. Yuan, *Alternating sums of the reciprocal Fibonacci numbers*, J. Integer Seq. **20** (2017) Article ID 17.1.4.
- [11] A.Y. Wang and W. Zhang, *The reciprocal sums of even and odd terms in the Fibonacci sequence*, J. Inequal. Appl. **2015** (2015) Article ID 376.
doi:10.1186/s13660-015-0902-2
- [12] A.Y. Wang and F. Zhang, *The reciprocal sums of the Fibonacci 3-subsequences*, Adv. Differ. Equ. **2016** (2016) Article ID 27.
doi:10.1186/s13662-016-0761-2
- [13] W. Zhang and T. Wang, *The infinite sum of reciprocal Pell numbers*, Appl. Math. Comput. **218** (2012) 6164–6167.
doi:10.1016/j.amc.2011.11.090

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