Generalized Pell numbers, balancing numbers and binary quadratic forms

AHMET TEKCAN and MERVE TAYAT

ABSTRACT.

In this work, we derive some algebraic identities on generalized Pell numbers and their relationship with balancing numbers. Also we deduce some results on binary quadratic forms involving Pell and balancing numbers.

REFERENCES

[1] Behera, A. and Panda, G. K., *On the Square Roots of Triangular Numbers*, The Fibonacci Quarterly, **37** (1999), No. 2, 98–105
[2] Buchmann, J. and Vollmer, U., *Binary Quadratic Forms: An Algorithmic Approach*, Springer-Verlag, Berlin, Heidelberg, 2007
[3] Buell, D. A., *Binary Quadratic Forms, Clasical Theory and Modern Computations*, Springer-Verlag, New York, 1989
[4] Conway, J. H. and Guy, R. K., *Fibonacci Numbers, In The Book of Numbers*, New York, Springer-Verlag 1996
[5] Flath, D. E., *Introduction to Number Theory*, Wiley, 1989
[6] Gözeri, G. K., Özkoç, A. and Tekcan, A., *Some Algebraic Relations on Balancing Numbers*, Accepted for publication to Utilitas Mathematica
[7] Hilton, P., Holton, D. and Pedersen, J., *Fibonacci and Lucas Numbers, Ch. 3 in Mathematical Reflections in a Room with Many Mirrors.* New York, Springer-Verlag 1997
[8] Koshy, T., *Fibonacci and Lucas Numbers with Applications.* John Wiley and Sons, 2001
[9] Mollin, R. A., *Quadratics.* CRS Press, Boca Raton, New York, London, Tokyo, 1996
[10] Niven, I., Zuckerman, H. S. and Montgomery, H. L., *An Introduction to the Theory of Numbers*, Fifth ed. John Wiley&Sons. Inc., New York, 1991
[11] Olajos, P., *Properties of Balancing, Cobalancing and Generalized Balancing Numbers*, Annales Mathematicae et Informaticae **37** (2010), 125–138
[12] Panda, G. K., *Some Fascinating Properties of Balancing Numbers*, Proceedings of the Eleventh International Conference on Fibonacci Numbers and their Applications, Cong. Numer., **194** (2009), 185–189
[13] Panda, G. K. and Ray, P. K., *Cobalancing Numbers and Cobalancers*, Int. J. Math. Math. Sci., **8** (2005), 1189–1200
[14] Panda, G. K. and Ray, P. K., *Some Links of Balancing and Cobalancing Numbers with Pell and Associated Pell Numbers*, Bul. of Inst. of Math. Acad. Sinica, **6** (2011), No. 1, 41–72
[15] Ray, P. K., *Balancing and Cobalancing Numbers*, PhD thesis, Department of Mathematics, National Institute of Technology, Rourkela, India, 2009
[16] Ribenboim, P., *My Numbers, My Friends, Popular Lectures on Number Theory*, Springer-Verlag, New York, Inc. 2000
[17] Santana, S. F. and Diaz–Barrero, J. L., *Some Properties of Sums Involving Pell Numbers*, Missouri Journal of Mathematical Science, **18** (2006), No. 1, 33–40

DEPARTMENT OF MATHEMATICS
ULUDAG UNIVERSITY
FACULTY OF SCIENCE
BURSA, TURKIYE
E-mail address: `tekcan@uludag.edu.tr`
E-mail address: `mervetayat07@gmail.com`