The Coinciding Polygonal Numbers and the Related Arithmetical Properties of Tchebyshef Polynomials

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Abstract: We present an algorithm for identification of all coinciding heptagonal and square numbers. The solution to the corresponding Diophantine equation is in the form of three series of ascending solutions. We also specify arithmetic progressions containing certain linear combinations of values of Tchebyshef polynomials at odd triangle numbers.

This research was supported by the Russian Foundation for Basic Research, RFBR grant 14-01-00253 a.

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