

The 2-log-convexity of the Apéry Numbers

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Abstract: We present an approach to proving the 2-log-convexity of sequences satisfying three-term recurrence relations. We show that the Apéry numbers, the Cohen-Rhin numbers, the Motzkin numbers, the Fine numbers, the Franel numbers of order 3 and 4 and the large Schröder numbers are all 2-log-convex. Numerical evidence suggests that all these sequences are k -logconvex for any $k \geq 1$ possibly except for a constant number of terms at the beginning.

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