

Kevin Hare, Helmut Prodinger, and Jeffrey Shallit
Three Series for the Generalized Golden Mean,
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Abstract

As is well-known, the ratio of adjacent Fibonacci numbers tends to $\phi = (1 + \sqrt{5})/2$, and the ratio of adjacent Tribonacci numbers (where each term is the sum of the three preceding numbers) tends to the real root η of $X^3 - X^2 - X - 1 = 0$. Letting α_n denote the corresponding ratio for the generalized Fibonacci numbers, where each term is the sum of the n preceding, we obtain rapidly converging series for α_n , $1/\alpha_n$, and $1/(2 - \alpha_n)$.