This note reports on the first of several contemplated experiments on the behavior of the continued fractions for certain algebraic numbers. The statistic considered here is the sum $S_n(x)$ of the first $n$ partial quotients in the regular continued fraction expansion of $x$. A table gives $S_n(\sqrt[3]{2})$ for $n = 100(100)2000$. According to a result of Khintchine [Compositio Math. 1, 361–382 (1935)] $S_n(x) \sim n \log_2 n$ for almost all $x$. The latter function is tabulated for comparison purposes. The comparison shows $S_n(\sqrt[3]{2})/(n \log_2 n)$ to be mostly greater than unity and often nearly two. Whether this deviation is significant the authors do not know. The IAS computer is being used with a multiple precision code of variable multiplicity.

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References


Note: This list reflects references listed in the original paper as accurately as possible with no attempt to correct errors.