

WHERE DO ALL THE VALUES GO? PLAYING WITH TWO-ELEMENT CONTINUED FRACTIONS

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To Professor W.J. Thron on the occasion of his 70th birthday.

1. Introduction. In the present paper we deal with continued fractions

$$(1.1) \quad \mathbf{K}_{n=1}^{\infty} \frac{a_n}{1} = \frac{a_1}{1} + \frac{a_2}{1} + \dots + \frac{a_n}{1} + \dots +,$$

where $a_n \in \mathbf{C}$, $a_n \neq 0$ for all n (except for one example in Section 4).

In using continued fractions the situation is often as follows: All continued fractions in question are in a certain family, given by the condition that all a_n belong to a given set E , which is a convergence region or a conditional convergence region (for definitions, see [3 pp. 78 and 80]). For a given such set E let \mathcal{F}_E denote that particular family:

$$(1.2) \quad \mathcal{F}_E := \left\{ \mathbf{K}_{n=1}^{\infty} \frac{a_n}{1}; a_n \in E \text{ for all } n \right\}.$$

Information on \mathcal{F}_E generally is of value in computation of values of continued fractions from \mathcal{F}_E . We shall here concentrate on one particular type of information, i.e., the set L_E of possible values,

$$(1.3) \quad f = \mathbf{K}_{n=1}^{\infty} \frac{a_n}{1},$$

of continued fractions in \mathcal{F}_E :

$$(1.4) \quad L_E = \left\{ f; \mathbf{K}_{n=1}^{\infty} \frac{a_n}{1} \in \mathcal{F}_E \right\}$$

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