

Recursive Formulas for the Simple Continued Fraction of some Mathematical Constants

Horváth Sándor

Sapientia Hungarian University of Transilvania

shorvath@ms.sapientia.ro

Recursive formulas for the generation of the simple continued fraction of π , e^3 and $\ln 2$ are proposed. The formulas are based on second order linear recurrence relations with nonconstant coefficients and allow to compute the next term of the continued fraction expansion using, besides the term's order, only the previous two terms of the expansion. These formulas and the algorithms associated them, functioning as a generation rule of the simple continued function expansion, can be viewed as analogues to the pattern rules of the expansions exhibited by e and e^2 , answering in a way the old question if there exists any regularity behind the apparent randomness of the terms of the canonical continued fraction expansion of these numbers.