



## SEQUENCES, SERIES AND DIOPHANTINE EQUATIONS

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### Abstract

Let the equation  $\frac{a'}{n'} = \sum_{j=1}^{j=n} \left( \frac{1}{x_j} \right)$  with  $x_j$ ,  $a'$  and  $n'$  positive integers, we establish an equivalent equation. It allows to define sequences and series. A quick calculus leads to an impossibility, which means that the initial equation has not solutions and it is in contradiction with the fact that we know solutions, we conclude that the propositions about the solutions of this equation are undecidable for some  $a$ .

**Keywords and phrases:** Diophantine equations, analysis, series, Fourier series, conjecture.

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