

## Quiddities of polygon dissections and the Conway-Coxeter frieze equation

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*To the memory of John Conway*

**Abstract.** We study a  $2 \times 2$  matrix equation arising naturally in the theory of Coxeter frieze patterns. It is formulated in terms of the generators of the group  $\mathrm{PSL}(2, \mathbb{Z})$  and is closely related to continued fractions. It appears in a number of different areas, for example, toric varieties. We count its positive solutions, obtaining a series of integer sequences, some known and some new. This extends classical work of Conway and Coxeter proving that the first of these sequences is the Catalan numbers.

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