# A sequence whose adjacent terms always make the given algebraic expression a square number

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$$\frac{1 - 36z + 23z^2}{1 - 38z + 38z^2 - z^3} = \sum_{i=0}^{\infty} a_i z^i \tag{1}$$

$$3 + \frac{a_i^3 + a_{i+1}^3}{\frac{1}{a_i} + \frac{1}{a_{i+1}}} = \left(6a_i a_{i+1} - 6 - a_i - a_{i+1}\right)^2 \tag{2}$$