Eventually constant solutions of a rational difference equation

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References:


Abstract:

We describe all the solutions of a rational difference equation from Putnam’s mathematical competition, which are eventually equal to its positive equilibrium $\frac{x}{\tilde{x}}=1$. As a consequence we give a new, elegant and short proof of the fact that the equation has a positive solution which is not eventually equal to one. Moreover, we show that almost all solutions of the equation are not eventually equal to one.

Keywords:

Eventually equal to unity, Rational difference equation, Positive solutions