V. Vasnetsov (1881)

Problem of Fortnight

Finishing date: 11/07/2018

Melisandre has two vials of 1 oz. capacity each. One of them is full of Holy Water. She asks Rosamunda to go to the Fountain of Youth and put some amount of Water of Life in the other vial. Melisandre then wants to mix the two liquids to obtain a solution of 40% Water of Life and 60% Holy Water, by pouring an arbitrary amount of liquid from one vial into the other (without wasting any amount of either liquid). She is able to perform this pouring process any (finite) number of times. What is the minimal positive amount of Water of Life that Rosamunda can put in the second vial to make it impossible for Melisandre to reach the desired proportion?

All the information about the Problem of the Week challenge can be found at:
utdallas.edu/math/undergraduate/problem-of-the-week