

# A CHARACTERIZATION OF THE GOLDEN SECTION, OR OF THE CONSTANT OF FIBONACCI

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ABSTRACT. It is well-known that the famous golden number  $\alpha = (1 + \sqrt{5})/2$  admits the following two representations

$$x(a) = \sqrt{a + \sqrt{a + \sqrt{a + \dots}}}$$
$$y(b) = b + \frac{1}{b + \frac{1}{b + \frac{1}{\ddots}}}$$

with  $a = b = 1$ .

We prove the converse implication, i.e. if a number  $A$  admits the both representations  $x(a)$  and  $y(b)$  with the same parameter  $a = b$ , then it results obviously that  $a = b = 1$  and  $A = x(1) = y(1) = \alpha$ .

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