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Title: An open problem concerning the diophantine equation $a^x + b^x = c^z$

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Let r be an odd integer with $r > 1$, and let m be an even integer with $m \equiv 2 \pmod 4$. Let a, b, c be positive integers satisfying $(a, b, c) = (|V(r)|, |U(r)|, m^2 + 1)$, where $V(r) + U(r)\sqrt{-1} = (m + \sqrt{-1}\,)^r$. In this paper we prove that if c is a prime and either $r \not\equiv 1 \pmod 8$ and $m > 2r/\pi$ or $r \equiv 1 \pmod 8$ and $m > 41r^{3/2}$, then the equation $a^x + b^y = c^z$ has only the positive integer solution $(x, y, z) = (2, 2, r)$.

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