



Year: 2006

Vol.: 68

Fasc.: 3-4

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

Author(s): Maohua Le

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 $(x, y, z) = (2, 2, r)$.

Address:

Maohua Le
Department of Mathematics
Zhangjiang Normal College
29 Cunjin Road, Chikan
Zhanjiang, Guangdong
P.R. China