

On the Solutions of the Equation $x^3 + Ax = B$ in \mathbb{Z}_3^* with Coefficients from \mathbb{Q}_3

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ABSTRACT

Recall that in [1] it is obtained the criteria solvability of the Equation $x^3 + ax = b$ in \mathbb{Z}_p^* , \mathbb{Z}_p and \mathbb{Q}_p for $p > 3$. Since any p -adic number x has a unique form $x = p^k x^*$, where $x^* \in \mathbb{Z}_p^*$ and $k \in \mathbb{Z}$, in [1] it is also shown that from the criteria in \mathbb{Z}_p^* it follows the criteria in \mathbb{Z}_p and \mathbb{Q}_p . In this paper we provide the algorithm of finding the solutions of the Equation $x^3 + ax = b$ in \mathbb{Q}_3 with coefficients from \mathbb{Q}_3 .

KEYWORDS : p -Adic Numbers; Solvability of Equation; Congruence