



SOLVING THE CLASS EQUATION $x^d = \beta$ IN AN ALTERNATING GROUP FOR EACH $\beta \in C^\alpha \cap H^c$ AND $n > 1$

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Abstract

The main purpose of this paper is to solve the class equation $x^d = \beta$ in an alternating group, (This means we try to find the solutions set $X = \{x \in A_n \mid x^d \in A(\beta)\}$) and find the number of these solutions $|X|$ where β ranges over the conjugacy class $A(\beta)$ in A_n and d is a positive integer. In this paper, we solve the class equation $x^d = \beta$ in A_n where $\beta \in H^c \cap C^\alpha$, for all $n > 1$. H^c is the complement set of H where $H = \{C^\alpha \text{ of } S_n \mid n > 1, \text{ with all parts } \alpha_k \text{ of } \alpha \text{ different and odd}\}$. C^α is conjugacy class of S_n and form class C^α depends on the cycle type α of its elements. If $\lambda \in C^\alpha$ and $\lambda \in H \cap C^\alpha$, then C^α splits into the two classes C^{α^\pm} of A_n .

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