

Title: On extensions of the generalized cosine functions from some large sets

Author(s): Anna Bahyrycz, Janusz Brzdęk and Eliza Jabłońska

Let $(G, +)$ be a commutative semigroup, τ be an endomorphism of G and involution, D be a nonempty subset of G , and P be a quadratically closed field with $\text{char} P \neq 2$. We show that if the set $D \setminus g^{-1}(\{0\})$ is ‘sufficiently large’, then each function $g : D \rightarrow P$, satisfying the condition: $g(x + y) + g(x + \tau(y)) = 2g(x)g(y)$ for $x, y \in D$ with $x + y, x + \tau(y) \in D$, can be extended to a unique solution $f : G \rightarrow P$ of the functional equation $f(x + y) + f(x + \tau(y)) = 2f(x)f(y)$ for $x, y \in G$.

Address:

Anna Bahyrycz
Faculty of Applied Mathematics
AGH University of Science
and Technology
Mickiewicza 30
30-059 Kraków
Poland

Address:

Janusz Brzdęk
Department of Mathematics
Pedagogical University
Podchorążych 2
30-084 Kraków
Poland

Address:

Eliza Jabłońska
Department of Discrete Mathematics
Rzeszów University of Technology
Powstańców Warszawy 12
35-959 Rzeszów
Poland