

CHAPTER I

INTRODUCTION



In [1], Somporn Malangpoo determined all solutions of the functional equation

$$(A) \quad g(xy^{-1}) = g(x)g(y) + f(x)f(y)$$

where f and g are functions from an abelian group G into a field F of characteristic different from 2. If we consider the domain of f and g to be a commutative inverse semigroup S , then the above solution is a special case.

The purpose of this study is to determine all solutions of (A) on a commutative inverse semigroups. In Chapter III, we prove reduction theorems. In Chapter IV and V, we characterize all solutions of (A) on a commutative inverse semigroup S such that $g(e) = 1$ for all $e \in E(S)$ and $g(e) \neq 1$ for any $e \in E(S)$, respectively. In Chapter VI, we characterize all solutions of (A) on a commutative inverse semigroup.

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