CHAPTER I

INTRODUCTION

In [1], A.O.L. Atkin proved that if f is any continuous real - valued function of two real variables which satisfies

(A) $f(x,y) + f(x+y,z) = f(y,z) + f(x,y+z)$

for all real numbers x,y,z, then there exists an unique continuous real - valued function g of a single real variable such that $g(0) = g(1)$

and

(B) $f(x,y) = g(x) + g(y) - g(x+y)$

for all real numbers x,y .

The purpose of this study is to generalize the above result to the case where the argument of the functions vary over some topological groups.

Chapter III deals with a general case where we do not assume any topological structure on the groups. Our main results in this case are given in theorem 3.8 and theorem 3.9.

Chapter IV deals with the case where the domain of our functions are topological groups and the functions are required to be continuous. The main results in this case are given in theorem 4.10 and theorem 4.15 .