

INTRODUCTION

In [4], P.Sinutoke has defined a semiring to be a set S together with binary operations called addition (+) and multiplication (\cdot) such that $(S,+)$ and (S,\cdot) are commutative semigroups, and multiplication distributes over addition. From this definition, P.Sinutoke defines a semifield in [4], to be a semiring S such that (S,\cdot) is a group with zero. In this thesis we shall give a generalization of this concept of a semifield. With this definition we prove some theorems concerning the properties of these generalized semifields.

In Chapter I, we introduce some notations, give definitions and recall some theorems that will be used.

In Chapter II, we study generalized semifields which we shall call semifields from now on. We show that there are three types of semifields which we call semifields of type I, type II and type III respectively, We give the basic properties of all types of semifields and we completely classify them.

Chapter III contains the embedding theorems concerning semirings, ratio semirings, semifields and fields.

In Chapter IV, we show that prime semifields always exist and we determine all prime semifields of semifields.