



A NOTE ON PAPPIAN AFINNE PLANES

Pınar ANAPA* & İbrahim GÜNALTILI**

Abstract

In (Schmidt and Steinitz,-1996); an affine plane with fixed basis $\{t_1, t_2, 0\}$ is coordinatized. Then, a ternary operation T on R which is a set of points on l which is dependent on the coordinate system l_1, l_2, t is defined. In addition, two different binary operation denoted by $+, \bullet$ on R using ternary operation T . After then, it is showed that $(R, +, \bullet)$ is a division ring. In this paper, first of all we examined the relation between (R, T) ternary ring and Desargues postulate in affine plane. After then, we showed that $(R, +, \bullet)$ is field in case affine plane satisfies Pappus Theorem. This results appeared in the first author's Msc thesis.

Keywords : Afine plane, Desargues Postulat, Pappus Theorem

1. INTRODUCTION

Definition 1.1: [1] An affine space is a quadrupel $A = (P, L, \parallel, \sim)$ where P is a set, L is a set of nonempty subsets of P , \parallel is a binary relation on L and \sim is a binary relation on P such that the following conditions are satisfied.

(A1) **Line axiom** : For all $p, q \in P$ with $p \neq q$ there exists (with respect to set inclusion) a least member of L , denoted by pq , which contains p and q . Further, for every $l \in L$ and $p \in l$ there exists a $p \in P \setminus p$ with $l := pq$.