

CHAPTER I

INTRODUCTION



This thesis concerned with the existence of fixed points for non-expansive self-mappings. During the course of this thesis, we realised that some new definitions, theorems and proofs of theorems were needed to make the subject more complete and understandable. These new definitions or theorems or proofs of theorems and examples are preceded by an asterisk (*). We do not use an asterisk when we expand the proof of a theorem in the case where this proof is given by another author.

In chapter II of this thesis, we introduce the notions of weak topology of a topological vector space, which will be a basic tool for our investigation.

In chapter III, we introduce the character of star-shaped subsets of Banach spaces, and prove the existence of a fixed point for a non-expansive self-mapping.

In chapter IV, deal with the existence of a fixed point for a mapping with nonexpansive iterate.

Finally in chapter V, deal with contractive mappings, and characterize the relationship between them and contraction mappings, and give a result on the existence of a fixed point for a contractive mapping.