

CHAPTER I



INTRODUCTION

The purpose of this thesis is to study the relation between Fourier Transforms and Potential Theory.

In chapter II of the thesis is about some properties of the semicontinuous functions, Integration Theory, L^p -spaces, L^p -spaces and some definitions and notations sufficiently for using in this thesis.

In chapter III studies the Convolution of functions in L^p ($1 \leq p \leq \infty$), Kernel functions H_ϵ , convergent of the Convolution of functions f in L^p and H_ϵ , and the Convolution of f and H_ϵ whenever f are semicontinuous functions.

In chapter IV studies the Fourier Transform, Fourier Inversion Formula of functions in L^p ($p = 1, 2$), and also studies about Fourier Inversion Formula of functions in L^∞ whenever the functions are semicontinuous and continuous by using Convolutions.

Finally in chapter V introduces Poisson Integrals, Conjugate Poisson Integrals, Conjugate functions of functions in L^2 , Harmonic functions, Neumann problem, and in the last section studying the relation between the Conjugate functions and Generalized Potentials.