

LECTURES

Appendix A.3.

A.3. Numerical Methods in FEM

12.1. Introduction

In spite the fact that integral equations are almost never treated in numerical analysis textbooks, there is a large and growing literature on their numerical solution. One reason for the sheer volume of this activity is that there are many different kinds of equations, each with many different possible pitfalls. Often many different algorithms have been proposed to deal with a single case. There is a close correspondence between linear integral equations, which specify linear, integral relations among functions in an infinite-dimensional function space, and plain old linear equations, which specify analogous relations among vectors in a finite-dimensional vector space. This correspondence lies at the heart of most computational algorithms, as we in program realization of their numerical solution.