Contents

Chapter 1 Some topological preliminaries 1

Summary 1
1.1 Locally convex spaces 2
1.2 Vector valued infinite sums and integrals 6
1.3 Baire spaces 9
1.4 Barrelled spaces 11
1.5 Inductive limits 13

Chapter 2 Gâteaux-analyticity 19

Summary 19
2.1 Vector valued functions of several complex variables 20
2.2 Polynomials and polynomial maps 28
2.3 Gâteaux-analyticity 35
2.4 Boundedness and continuity of Gâteaux-analytic maps 43
Exercises 50

Chapter 3 Analyticity, or Fréchet-analyticity 51

Summary 51
3.1 Equivalent definitions 52
3.2 Separate analyticity 58
3.3 Entire maps and functions 65
3.4 Bounding sets 73
Exercises 79

Chapter 4 Plurisubharmonic functions 81

Summary 81
4.1 Plurisubharmonic functions on an open set Ω in a l.c. space X 82
4.2 The finite dimensional case 87
4.3 Back to the infinite dimensional case 94
4.4 Analytic maps and pluriharmonic functions 104

4.5 Polar subsets 107
4.6 A fine maximum principle 120
Exercises 127

Chapter 5 Problems involving plurisubharmonic functions 129

Summary 129
5.1 Pseudoconvexity in a l.c. space X 130
5.2 The Levi problem 135
5.3 Boundedness of p.s.h. functions and entire maps 144
5.4 The growth of p.s.h. functions and entire maps 146
5.5 The density number for a p.s.h. function 154
Exercises 162

Chapter 6 Analytic maps from a given domain to another one 163

Summary 163
6.1 A generalization of the Lindelöf principle 164
6.2 Intrinsic pseudodistances 168
6.3 Complex geodesics and complex extremal points 179
6.4 Automorphisms and fixed points 184
Exercises 194

Bibliography 195

Glossary of Notations 201

Subject Index 205