CONTENTS

PREFACE ix

Applications of Algebraic Geometry to Number Theory 1
By H. P. F. SWINNERTON-DYER

Abelian Varieties Over Finite Fields 53
By W. C. WATERHOUSE AND J. S. MILNE

Introduction aux travaux récents de Dwork 65
By NICHOLAS M. KATZ

The Integral Classical Groups and Their Automorphisms 76
By O. T. O'MEARA

Skew-Symmetric Forms for Number Fields 86
By KENKICHI IWASAWA

K_2 of Global Fields 87
By B. J. BIRCH

Class Formations 96
By YUKIYOSI KAWADA

Some Conjectures in Class Field Theory 115
By J. A. SHALIKA

Extensions of Cyclotomic Theory 123
By THOMAS STORER

Reducibility of Lacunary Polynomials 135
By A. SCHINZEL

Quadratic Forms Over Fields 150
By A. PFISTER

A Metamathematical Approach to Some Problems in Number Theory 161
By JAMES AX

Notes on Matijasevič's Solution of Hilbert's Tenth Problem 191
By JULIA ROBINSON

Effective Methods in Diophantine Problems 195
By ALAN BAKER

On Schanuel's Conjectures and Skolem's Method 206
By JAMES AX

On Approximations of Algebraic Numbers by Algebraic Numbers of Bounded Degree 213
By EDUARD WIRSING

Lectures on Transcendental Numbers 248
By KURT MAHLER

Mahler's T-Numbers 275
By WOLFGANG M. SCHMIDT

Selberg's Sieve With Weights 287
By H.-E. RICHERT

Sieve Methods 311
By ATLE SELBERG

Density Theorems for the Zeta Function 352
By ENRICO BOMBIERI

On Some Recent Results in the Analytical Theory of Numbers 359
By PAUL TURÁN

Characterization of the Logarithm as an Additive Function 375
By EDUARD WIRSING

Some Results Concerning Reciprocity Law and Real Analytic Automorphic Functions 382
By TOMIO KUBOTA

Elliptic Curves Over Q: A Progress Report 396
By B. J. BIRCH

Recent Advances in Determining All Complex Quadratic Fields of a Given Class-Number 401
By H. M. STARK

Class Number, a Theory of Factorization, and Genera 415
By DANIEL SHANKS

AUTHOR INDEX 441

SUBJECT INDEX 445