# OSAKA JOURNAL OF MATHEMATICS

## **EDITED BY**

A. KASUE

S. KOTANI

M. MASUDA

M. MIYANISHI

T. NISHITANI

Vol. 36 No. 4

December 1999

PUBLISHED JOINTLY BY THE

DEPARTMENTS OF MATHEMATICS

OSAKA UNIVERSITY AND OSAKA CITY UNIVERSITY

# OSAKA JOURNAL OF MATHEMATICS

### EDITED BY

A. KASUE

S. KOTANI

M. MASUDA

T. HIBI

M. MIYANISHI(Chairman)

T. NISHITANI

### WITH THE COOPERATION OF

E. DATE A. FUJIKI

T. IBUKIYAMA Y. IMAYOSHI M. IKAWA T. KAMAE Y. KAMETAKA M. KANEDA N. KAWANAKA N. KOISO A. KAWAUCHI

T. KOMATSU T. MABUCHI A. MATSUMURA H. NAGAI M. NAGASE Y. NAKAMURA M. NAMBA Y. SAKANE T. SUZUKI

Y. TSUSHIMA Y. YAMAMOTO S. USUI

Osaka Journal of Mathematics is published quarterly by the joint editorship of the Department of Mathematics, Graduate School of Science, Osaka University and the Department of Mathematics, Faculty of Science, Osaka City University with the cooperation of the Department of Mathematical Sciences, Faculty of Engineering Science, Osaka University.

The Journal is devoted entirely to the publication of original works in mathematics and related fields. Upon publication of the articles, all copyrights are reserved under the universal copyright conventions by the Departments of Mathematics, Osaka University and Osaka City University and KINOKUNIYA COMPANY LTD.

### Subscription

Subscriptions and orders for back numbers should be sent to

KINOKUNIYA COMPANY LTD. 17-7 Shinjuku 3-chome, Shinjuku-ku, Tokyo 163-8636, JAPAN