

THE  
Mathematics Student

*A Quarterly Dedicated to the Service of Students and Teachers  
of Mathematics in India.*

Vol. X]

MARCH 1942

[No. 1.

Edited by

A. NARASINGA RAO, M.A., L.T., D.Sc., F.A.Sc.

*Annamalai University, Annamalainagar, South India.*

*With the co-operation of*

N. DURAIRAJAN, M.A., B.E.

B. RAMAMURTI, M.A., D.Sc.

V. GANAPATI IYER, M.A., D.Sc.

S. SIVASANKARANARAYANA PILLAI, D.Sc.

A. A. KRISHNASWAMI AYYANGAR, M.A., L.T. H. SUBRAMANI IYER, M.A., Ph.D.

*and others.*

Printed by REV. FR. A. SUSAI REGIS,  
Supt., St. Joseph's Industrial School Press, Trichinopoly

AND

Published by S. MAHADEVAN, M.A.,  
Honorary Asst. Secretary, Presidency College, Madras.

1942

CONTENTS

|  |     |
|--|-----|
| THE TWELFTH CONFERENCE OF THE INDIAN MATHEMATICAL SOCIETY                | PAG |
| PRESIDENTIAL ADDRESS: By <b>Dr. R. Vaidyanathaswamy</b>                  | ... |
| ABSTRACTS OF PAPERS  | ... |
| SYMPOSIUM ON GROUP THEORY  | ... |
| SYMPOSIUM ON FOURIER INTEGRALS AND TRANSFORMS: By <b>Dr. R. S. Varma</b> | ... |
| SYMPOSIUM ON THE ORIGIN OF THE SOLAR SYSTEM                              | ... |
| BUSINESS MEETING OF THE INDIAN MATHEMATICAL SOCIETY                      | ... |
| DISCUSSION ON THE TEACHING OF MATHEMATICS IN SCHOOLS AND COLLEGES        | ... |
| MEMBERS PRESENT AT THE CONFERENCE AT ALIGARH                             | ... |

All communications intended for publication should be sent to the Editor, A. NARASINGA RAO, Annamalai University, Annamalai nagar, South India. Communications relating to the receipt of the Journal, changes of address, and the purchase of current or back numbers of this journal should be sent to the Assistant Secretary, S. MAHADEVA IYER, Assistant Professor of Mathematics, Presidency College, Madras.

All communications regarding advertisements must be addressed to the Editor.

Remittances of membership fees and of subscriptions should be sent to the Treasurer, Prof. L. N. SUBRAMANIAM, Department of Mathematics, Christian College, Tambaram, Madras Presidency.

COLL. ...  
RK City.

RULED SURFACES WHOSE CURVED ASYMPTOTIC LINES CAN BE DETERMINED BY QUADRATURE

BY

RAM BEHARI, *University of Delhi*

*Abstract.* 1. Picard<sup>1</sup> has shown that if the generators of a ruled surface belong to a linear complex, then the curved asymptotic lines can be determined by quadratures. The determination of the asymptotic lines of some other special kinds of ruled surfaces by quadratures has also been considered by Buhl,<sup>2</sup> Goussard,<sup>3</sup> Srinivasiengar<sup>4</sup> and Hayashi.<sup>5</sup> The object of this paper is to approach the problem of finding ruled surfaces whose curved asymptotic lines can be determined by quadratures in a different way by examining certain conditions under which the Riccati equation can be integrated.

2. Let the equations of the ruled surface be

$$x = p + lv, \quad y = q + mu, \quad z = r + nu,$$

where  $p, q, r; l, m, n$  are functions of  $v$ , the arc of the base curve.

The fundamental magnitudes of the second order  $L, M, N$  are given by  $LV = [x_1, x_2, x_{11}] = [l, p' + ul', 0] = 0$ , where the notation  $[x_1, x_2, x_{11}]$  denotes

$$\begin{vmatrix} x_1 & y_1 & z_1 \\ x_2 & y_2 & z_2 \\ x_{11} & y_{11} & z_{11} \end{vmatrix}$$

$$MV = [x_1, x_2, x_{12}] = [l, p' + ul', l'] = \sum l (q'n'' - r'm'') \equiv \delta, \text{ say,}$$

$$NV = [x_1, x_2, x_{22}] = [l, p' + ul', p'' + ul''] \\ = \sum l (q' r'' - r' q'') + u \sum l \{(m' r'' - m'' r') + (q' n'' - n' q'')\} \\ + u^2 \sum l (m' n'' - n' m'') \equiv \lambda + \mu u + \nu u^2, \text{ say,}$$

where  $\lambda = \sum l (q' r'' - r' q'')$ ,  
 $\mu = \sum l \{(m' r'' - m'' r') + (q' n'' - n' q'')\}$ ,  
 $\nu = \sum l (m' n'' - n' m'')$ .

CONTENTS

|  | PAGE |
|--|------|
| THE CALENDAR: By <b>Hansraj Gupta</b> ... ..   | 105  |
| SOME THEOREMS CONCERNING QUINTICS INSOLUBLE BY RADICALS:<br>By <b>Y. Bhalotra and S. Chowla</b> ... .. | 110  |
| ON SYMMETRIC POLYNOMIAL FUNCTIONS OF ZEROS OF POLYNOMIALS:<br>By <b>Dr. T. Vijayaraghavan</b> ... ..   | 113  |
| A PORISM ON ELEVEN SPHERES: By <b>N. A. Court</b> ... ..   | 115  |
| ON SOME PROBLEMS OF TRANSPORT ECONOMICS: By <b>H. E. Peries</b> ... ..                                 | 119  |
| A DIALOGUE: By <b>F. W. Levi</b> ... ..  | 123  |
| ANOTHER DIALOGUE: By <b>F. W. Levi</b> ... ..  | 129  |
| NOTES AND DISCUSSIONS  |      |
| Metrization by means of a function satisfying a single axiom:<br>By <b>P. Kesava Menon</b> ... ..      | 135  |
| On Conformal Transformations: By <b>B. Seetharama Sastri</b> ... ..                                    | 137  |
| A Contact Transformation: By <b>B. Seetharama Sastri</b> ... ..  | 138  |
| REVIEWS ... ..   | 141  |
| ANNOUNCEMENTS AND NEWS ... ..  | 147  |

All communications intended for publication should be sent to the Editor **A. NARASINGA RAO**, Annamalai University, Annamalainagar, South India. Communications relating to the receipt of the Journal, changes of address, and the purchase of current or back numbers of this journal should be sent to the Assistant Secretary **S. MAHADEVA IYER**, Assistant Professor of Mathematics, Presidency College, Madras.

All communications regarding advertisements must be addressed to the Editor.

Remittances of membership fees and of subscriptions should be sent to the Treasurer, **Prof. L. N. SUBRAMANIAM**, Department of Mathematics, Christian College Tambaram, Madras Presidency.

THE

# Mathematics Student

*A Quarterly Dedicated to the Service of Students and Teachers of Mathematics in India.*

Vol X]

DECEMBER 1942

[N

Edited by

**A. NARASINGA RAO**, M.A., L.T., D.Sc., F.A.Sc.

*Annamalai University, Annamalainagar, South India.*

*With the co-operation of*

**N. DURAIRAJAN**, M.A., B.E.

**B. RAMAMURTI**, M.A., D.Sc.

**V. GANAPATI IYER**, M.A., D.Sc.

**S. SIVASANKARANARAYANA PILLAI**

**A. A. KRISHNASWAMI AYYANGAR**, M.A., L.T. **H. SUBRAMANI IYER**, M.A., Ph.D.

*and others.*

Printed by **REV. FR. A. SUSAI REGIS**,  
Supt., St. Joseph's Industrial School Press, Trichinopoly

AND

Published by **S. MAHADEVAN**, M.A., L.T.  
Presidency College, Madras.

1943

CONTENTS

|   | PAGE |
|---|------|
| THE CALENDAR: By Hansraj Gupta ... ..   | 105  |
| SOME THEOREMS CONCERNING QUINTICS INSOLUBLE BY RADICALS:<br>By Y. Bhalotra and S. Chowla ... .. | 110  |
| ON SYMMETRIC POLYNOMIAL FUNCTIONS OF ZEROS OF POLYNOMIALS:<br>By Dr. T. Vijayaraghavan ... ..   | 113  |
| A PORISM ON ELEVEN SPHERES: By N. A. Court ... ..   | 115  |
| ON SOME PROBLEMS OF TRANSPORT ECONOMICS: By H. E. Peries ... ..                                 | 119  |
| A DIALOGUE: By F. W. Levi ... ..  | 123  |
| ANOTHER DIALOGUE: By F. W. Levi ... ..  | 129  |
| NOTES AND DISCUSSIONS   |      |
| Metrization by means of a function satisfying a single axiom:<br>By P. Kesava Menon ... ..      | 135  |
| On Conformal Transformations: By B. Seetharama Sastri ... ..                                    | 137  |
| A Contact Transformation: By B. Seetharama Sastri ... ..  | 138  |
| REVIEWS ... ..  | 141  |
| ANNOUNCEMENTS AND NEWS ... ..   | 147  |

All communications intended for publication should be sent to the Editor A. NARASINGA RAO, Annamalai University, Annamalainagar, South India. Communications relating to the receipt of the Journal, changes of address, and the purchase of current or back numbers of this journal should be sent to the Assistant Secretary S. MAHADEVA IYER, Assistant Professor of Mathematics, Presidency College, Madras.

All communications regarding advertisements must be addressed to the Editor.

Remittances of membership fees and of subscriptions should be sent to the Treasurer, Prof. L. N. SUBRAMANIAM, Department of Mathematics, Christian College Tambaram, Madras Presidency.

THE

# Mathematics Student

*A Quarterly Dedicated to the Service of Students and Teachers of Mathematics in India.*

Vol X]

DECEMBER 1942

[N

Edited by

A. NARASINGA RAO, M.A., L.T., D.Sc., F.A.Sc.

*Annamalai University, Annamalainagar, South India.*

*With the co-operation of*

N. DURAIRAJAN, M.A., B.E.

B. RAMAMURTI, M.A., D.Sc.

V. GANAPATI IYER, M.A., D.Sc.

S. SIVASANKARANARAYANA PILLAI

A. A. KRISHNASWAMI AYYANGAR, M.A., L.T. H. SUBRAMANI IYER, M.A., Ph.D.

*and others.*

Printed by REV. FR. A. SUSAI REGIS,  
Supt., St. Joseph's Industrial School Press, Trichinopoly

AND

Published by S. MAHADEVAN, M.A., L.T.  
Presidency College, Madras.

1943

VOLUME X NUMBER 4.

DECEMBER 1942.

---

CONTENTS

---

|   | PAGE |
|---|------|
| INTUITIONISTIC THEORY OF LINEAR ORDER: By <b>K. Chandrasekharan</b> ...   | 149  |
| ON A THEOREM OF GROUP-THEORY CONNECTED WITH A PROBLEM ON PAPER-FOLDING AND WITH SOME OTHER PROBLEMS SOLVED, AND UNSOLVED: By <b>F. W. Levi</b> ... .. | 162  |
| INSTABILITY OF VARIABLE STARS AND THE CEPHEID THEORY OF THE ORIGIN OF THE SOLAR SYSTEM: By <b>S. K. Roy</b> ... ..                                    | 166  |
| NUMERICAL NIGHTMARES: By <b>A. Narasinga Rao</b> ... ..   | 170  |
| ON THE DIFFERENTIAL EQUATION $f''(x) = f(1/x)$ : By <b>Prithvi Nath Sarma</b> ...   | 173  |
| NOTES AND DISCUSSIONS   |      |
| Cylindrical projection and rolling: By <b>Hansraj Gupta</b> ... ..  | 175  |
| Notes on the Ellipse: By <b>Gaganbihari Bandyopadhyaya</b> ... ..   | 176  |
| A Neglected equation in Analytical Conics: By <b>C. T. Rajagopal</b> ...  | 178  |
| ANNOUNCEMENTS AND NEWS ... ..   | 180  |
| MATHEMATICAL GREETINGS TO THE NEW YEAR: By <b>A. A. K.</b> ...  | 182  |

---

All communications intended for publication should be sent to the Editor **A. NARASINGA RAO**, Annamalai University, Annamalainagar, South India. Communications relating to the receipt of the Journal, changes of address, and the purchase of current or back numbers of this journal should be sent to the Assistant Secretary **S. MAHADEVA IYER**, Assistant Professor of Mathematics, Presidency College, Madras.

All communications regarding advertisements must be addressed to the Editor.

Remittances of membership fees and of subscriptions should be sent to the Treasurer, **Prof. L. N. SUBRAMANIAM**, Department of Mathematics, Christian College, Tambaram, Madras Presidency.