

Indian Journal of Mathematics

Volume 43, No. 1, 2001

CONTENTS

Filip Defever, Ryszard Deszcz, Leopold Verstraelen and Sahnur Yaprak

ON THE EQUIVALENCE OF SEMISYMMETRY AND RICCI-SEMISYMMETRY FOR HYPERSURFACES

1-12

Abstract: In the context of P. J. Ryan's problem on the equivalence of the conditions $R \cdot R = 0$ and $R \cdot S = 0$ for hypersurfaces, we prove that there is indeed equivalence for hypersurfaces of semi-Euclidean spaces in any dimension, under an additional curvature condition of pseudosymmetric type.

N. M. Dragomir and S. S. Dragomir

AN INEQUALITY FOR LOGARITHMS AND ITS APPLICATION IN CODING THEORY

13-20

Abstract: In this paper we prove a new analytic inequality for logarithms and apply it for the Noiseless Coding Theorem.

A. M. Jarrah and A. P. Singh

A LIMITING CASE OF HARDY'S INEQUALITY

21-36

Abstract: We give characterizations of pairs of weights (u, v) so that the geometric mean operator $G_k f(x) = \exp\left(\frac{k+1}{x^{k+1}} \int_0^x t^k \ln f(t) dt\right)$ is bounded from $L_{p,v}^+((0, \infty))$ to $L_{q,u}^+((0, \infty))$, where f is positive a.e. on $(0, \infty)$ and $0 < p \leq q < \infty$.

M. Jayamala and K. S. Padmanabhan

ON CERTAIN CLASSES OF UNIVALENT AND p -VALENT ANALYTIC FUNCTIONS DEFINED USING RUSCHEWEYH'S DERIVATIVE

37-45

Abstract: In 1990 Milutin Obradovic [3] introduced the class M_n of analytic functions f in the unit disc E , satisfying $Re\left(\frac{D^{n+1}f}{D^n f}\right) < \frac{2n+3}{2n+2}$ (where $D^n f$ is the well known Ruscheweyh's derivative) and proved certain results. The aim of the present is to generalize the class M_n (i) by replacing $\frac{2n+3}{2n+2}$ by a general sequence $\{\alpha_n\}$ of real numbers (ii) by extending the result to p -valent case.

S. Jothimani and S. P. Anjali Devi

MHD COUETTE FLOW WITH HEAT TRANSFER AND SLIP FLOW EFFECTS IN AN INCLINED CHANNEL

47-62

Abstract: The problem of steady two dimensional laminar flow in slip flow regime of a viscous incompressible and electrically conducting fluid through an inclined channel of rectangular cross-section in the presence of a transverse magnetic field has been analysed. The walls of the channel are assumed to have prescribed temperatures and electrically non-conducting. The upper plate of the channel is considered to move

with constant velocity whereas the lower plate is at rest. The expressions for the velocity component, induced magnetic field and the temperature are obtained and they are shown numerically by means of graphs.

Paula Kemp

RETRIEVING A TOPOLOGICAL SPACE FROM ITS LATTICE OF OPEN SETS 63-67

Abstract: In this paper, necessary and sufficient conditions are given for a partially ordered set (which need not be finite) to be a topological poset.

S. Mudgal and P. S. Deshwal

LOVE WAVE SCATTERING DUE TO A SURFACE IMPEDANCE IN THE INTERFACE 69-83

Abstract: The paper presents a theoretical formulation for studying the problem of Love wave scattering due to the presence of a surface impedance in the interface. The displacements are obtained in terms of Fourier transforms by using Wiener-Hopf technique. Evaluation of the Fourier integrals along suitable contours in the complex plane gives reflected, transmitted and scattered Love waves appropriate to the surface impedance. The scattered waves are originating at the tip $(0, 0)$ of the scatterer and its image $(0, -2H)$ in the free surface. The numerical computations for the amplitude of the scattered waves have been plotted versus the wave number. The amplitude of scattered wave decreases sharply with small increase in the wave number.

R. Muthucumaraswamy, P. Ganesan and V. M. Soundalgekar

AN EXACT SOLUTION OF FLOW PAST AN IMPULSIVELY STARTED VERTICAL PLATE WITH HEAT FLUX AND VARIABLE MASS TRANSFER 85-97

Abstract: An exact solution to the flow due to the impulsive motion of an infinite vertical plate in its own plane in the presence of uniform heat flux and variable mass diffusion is considered. The dimensionless governing equations are solved by usual Laplace-transform technique. The velocity, temperature and concentration are studied for different parameters like the thermal Grashof number, Prandtl number, Schmidt number and for multiple buoyancy effects aiding and opposing. The values of skin-friction are tabulated.

Sanjay Rai and C. C. A. Sastri

GROUP CLASSIFICATION AND INVARIANT BOUNDARY CONDITIONS FOR GENERALIZED BURGERS EQUATIONS 99-118

Abstract: The Burgers equation $u_t = u_{xx} - uu_x$ (or a related form of it) occurs in a variety of fields. Another widely studied equation is the reaction-diffusion equation $u_t = u_{xx} + f(u)$. In this paper, the symmetry properties of the equation $u_t = u_{xx} + f(u, u_x)$, which is a generalization of both the above equations, are studied, and a group classification of this equation considered as a system is carried out. The classification is complete when f is a function of u_x alone but incomplete when f depends on both u and u_x . Once the classification is completed, invariant boundary conditions can be found corresponding to the different forms of f . Examples are given to illustrate the point.

R. N. Ray, A. Samad and T. K. Chaudhury

ON SOME UNSTEADY MHD FLOWS OF A SECOND ORDER FLUID
OVER A PLATE

119-128

Abstract: The general problem of impulsive motion of an electrically conducting second order fluid under transverse magnetic field over a plate is formulated and exact solutions are obtained by the method of Laplace transform for the two cases of motions corresponding to the so called Stokes' first and second problems. The effects of viscoelastic parameter and Hartmann number on the flow are studied. Numerical computations are carried out and represented graphically.
