Inequalities for marks in multidigraphs

S. Pirzada, U. Samee, T.A. Naikoo, Merajuddin

An r-digraph (multidigraph) D is an orientation of a multigraph that is without loops and contains at most two edges between any pair of distinct vertices. So 1-digraph is an oriented graph, and complete 1-digraph is a tournament. Define $p_v = r(n-1) + d_v^+ - d_v^-$, the mark ($r$-score) of a vertex v in an r-digraph D, where d_v^+ and d_v^-, respectively denote the outdegree and indegree of v and n is the number of vertices in D. In this paper, we obtain some stronger inequalities for marks in r-digraphs. (pp. 91-100)

Improved exponential estimator for population variance using two auxiliary variables

Rajesh Singh, Pankaj Chauhan, Nirmala Sawan, Florentin Smarandache

In this paper, exponential ratio and exponential product type estimators using two auxiliary variables are proposed for estimating unknown population variance S_y^2. Problem is extended to the case of two-phase sampling. Theoretical results are supported by an empirical study. (pp. 101-109)

On some classes of submanifolds satisfying Chen's equality in an Euclidean space

Cihan Özgür, Uday Chand De

We study submanifolds satisfying Chen's equality in an Euclidean space. Firstly, we consider projectively semi-symmetric submanifolds satisfying Chen's equality in an Euclidean space. We also study submanifolds satisfying the condition $P \cdot P = 0$. (pp. 109-116)

An approach to the approximation of the inverse of a square matrix by He's homotopy perturbation method

B. Keramati

In this paper, we present an efficient numerical algorithm for approximating the inverse of a square matrix based on homotopy perturbation method. Some numerical illustrations are given to show the efficiency of the algorithm. (pp. 117-124)

A new characterization of $L_2(q)$ where $q = p^n < 125$

Li-Guan He, Gui-Yun Chen

It is a well-known topic to characterize a finite simple group by using two quantities, the order of G and $\pi_e(G)$ in the past 30 years, where $\pi_e(G)$ denotes the set of orders of elements in G. Recently this topic has been finished by V.D. Mazurov, et al. Here the authors will try to characterize some finite simple groups by using less quantities and have successfully characterized $L_2(q)$, where $q = p^n < 125$, by using the order of $L_2(q)$ and the three largest element orders of $L_2(q)$.(pp. 125-134)

The Dirichlet BVP for the second order nonlinear ordinary differential equation at resonance

Sulkhan Mukhigulashvili

Efficient sufficient conditions are established for the solvability of the Dirichlet problem

$$u''(t) = p(t)u(t) + f(t, u(t)) + h(t) \quad \text{for} \quad a \leq t \leq b,$$

$$u(a) = 0, \quad u(b) = 0,$$

where $h, p \in L([a, b]; R)$ and $f \in K([a, b] \times R; R)$, in the case where the linear problem

$$u''(t) = p(t)u(t), \quad u(a) = 0, \quad u(b) = 0$$

has nontrivial solutions. (pp. 177-204)

Grüss' type inequalities for functions of selfadjoint operators in Hilbert spaces

S.S. Dragomir

Some inequalities of Grüss' type for functions of selfadjoint operators in Hilbert spaces, under suitable assumptions for the involved operators, are given.

(pp. 205-222)

Some divisible matrix groups

Y. Kemprasit, N. Triphop, A. Wasanawichit

A group G is said to be *divisible* if for any $x \in G$ and any positive integer n, there exists an element $y \in G$ such that $x = y^n$. For a positive integer $n > 1$, let $G_n(\mathbb{R})$ be the group under multiplication of all invertible $n \times n$ matrices over $\mathbb{R}$. For distinct positive integers $p, q \leq n$, let $G(n, p, q)$ be the subgroup of $G_n(\mathbb{R})$ consisting of all $A \in G_n(\mathbb{R})$ with $A_{ii} > 0$ for all $i \in \{1, \ldots, n\}$ and $A_{ij} = 0$ for distinct i, j such that $(i, j) \neq (p, q)$. Also, let $U(n)[L(n)]$ be the subgroup of $G_n(\mathbb{R})$ consisting of all upper [lower] triangular matrices $A \in G_n(\mathbb{R})$ with $A_{ii} > 0$ for all $i \in \{1, \ldots, n\}$. The purpose of this paper is to show that the matrix groups $G(n, p, q), U(n)$ and $L(n)$ are all divisible. (pp. 223-228)

Fuzzy subnexuses

A. Saeidi Rashkolia, A. Hasankhani

The notion of fuzzy prime subnexus of a nexus is defined, and some related results are obtained. In particular, by considering the concept of homomorphism, some theorems about the coimage and preimage are proved. Finally, the notion of Quotient nexus induced by a fuzzy subnexus is introduced and some its properties are investigated. (pp. 229-242)

On a class of Chinese hyperrings

Sanja Jančić Rašović

In this paper we have shown one construction of the Chinese hyperrings, using the class of multiendomorphisms of the starting ring $(R, +, \cdot)$ or the class of multi-endomorphisms of its additive group $(R, +)$. (pp. 243-254)

Some results on analogous continued fraction of Ramanujan

Bhaskar Srivastava

We give a differential for $\frac{1}{C(q)}$ and prove an identity which is analogous to Ramanujan's Entry 3.2.7. We also give a simpler proof for Entry 9(v).(pp. 255-260)

On the hyperBanach spaces

P. Raja, S.M. Vaezpour

In this paper we are going to define hyperBanach spaces and prove some interesting theorems such as open mapping theorem, closed graph theorem, and uniform boundedness principal in these spaces. Also we define a quasinorm over hypervector spaces that converts a factor hypervector space into a normed hyper vector space. (pp. 261-272)

On the qualitative behaviors of solutions to a kind of nonlinear third order differential equations with retarded argument

Cemil Tunç

In this paper, with use of a Lyapunov functional, we discuss stability and boundedness of solutions to a kind of nonlinear third order differential equation with retarded argument:

$$\begin{aligned} &x'''(t) + h(x(t), x'(t), x''(t), x(t-r(t)), x'(t-r(t)), x''(t-r(t)))x''(t) \\ &\quad + g(x(t-r(t)), x'(t-r(t))) + f(x(t-r(t))) \\ &\quad = p(t, x(t), x'(t), x(t-r(t)), x'(t-r(t)), x''(t)), \end{aligned}$$

when $p(t, x(t), x'(t), x(t-r(t)), x'(t-r(t)), x''(t)) = 0$ and $\neq 0$, respectively. Our results include and improve some well-known results in the literature. An example is also given to illustrate the importance of results obtained and the topic.
(pp. 273-284)

Hyperaction of semigroups and monoids

M.K. Sen, Reza Ameri, Goutam Ghowdhury

The purpose of this note is the study of hyper action as a generalization of action of a monoid on a set. In this regards, first we introduce the notion of hyperactions of type 1 and type 2 and then we study the basic properties of this notion. In particular, we investigate the relationship between hyperactions and non-deterministic automata. (pp. 285-294)

Une remarque sur certaines formes de Weierstrass

Titem Harrache, Nouressadat Touafek

Dans cette note, on s'intéresse à la recherche d'une forme de Weierstrass de courbes de genre 1. On souligne sur des exemples l'intérêt de la méthode pour mettre en évidence les points de torsion ou d'ordre infini et pour obtenir des formes de Weierstrass tempérées. (pp. 295-308)

Non periodic solutions of fourth order nonlinear equations

Bruno Bianchini

In this paper we obtain a result of existence of solutions for a 4th order nonlinear equation subject to non periodic boundary conditions. (pp. 309-326)

On eight order mock theta function

S. Ahmad Ali

In the present paper we have introduced partial mock theta functions of orders eight. We have established certain identities relating these functions with those of different orders. (pp. 327-332)