Approximation of continuous functions by algebraic polynomials
Rateb Al-Btoush

Algebraic polynomials and de la Vallée-Poussin sums are introduced and their approximation properties for classes of continuous functions of two variables are studied.

Closed-form solution for mhd pipe flow of a dusty fluid
Hazem Ali Attia

In this paper, the unsteady flow of a dusty electrically conducting incompressible viscous fluid in a circular pipe is studied considering the ion slip. A constant pressure gradient in the axial direction and a uniform magnetic field directed perpendicular to the flow direction are applied. The particle-phase is assumed to behave as a viscous nonconducting fluid. A closed-form solution for the governing equations of both fluid and particle phases is obtained for the whole range of the physical parameters.

Fixed points of sequences of maps on fuzzy metric spaces
Ishak Altun, Duran Turkoglu

The purpose of this paper is to introduce the concept of commpatibility in fuzzy metric space and prove a common fixed point theorem illustrating with an example.

Common fixed point of non self mappings in convex metric spaces
I. Kubiaczyk, Sushil Sharma

In this paper we prove a common fixed point theorem for four non-self mappings in convex metric spaces under the condition of weak compatible mappings. We point out that the continuity of any mapping for the existence of the fixed point is not required.

The $(\in, \in \vee q)$-fuzzy prime, weak-prime and semiprime ideals of a $(\in, \in \vee q)$-fuzzy semigroup*
Yunqiang Yin, Dehua Xu, Hongxing Li

In this paper, using the idea of quasi-coincidence of a fuzzy point with a fuzzy set, the concepts of the $(\in, \in \vee q)$-fuzzy ideals, prime ideals, weak-prime ideals and semiprime ideals of a $(\in, \in \vee q)$-fuzzy semigroup are introduced and the fundamental properties of them are discussed. Finally, in the sense of homomorphism between two crisp semigroups, the image and the inverse image of the $(\in, \in \vee q)$-fuzzy ideals, prime ideals, weak-prime ideals and semiprime ideals are investigated.

The fourth duals of Banach algebras

M. Eshaghi Gordji, S.A.R. Hosseinioun

Let $\mathcal{A}$ be a Banach algebra. Then the second dual $\mathcal{A}^{**}$ of $\mathcal{A}$ is a Banach algebra with first (second) Arens product. We study the Arens products of $\mathcal{A}^4 (= (\mathcal{A}^{**})^{**})$. We find some conditions on $\mathcal{A}^{**}$ to be a left ideal in $\mathcal{A}^4$. We find the biggest two sided ideal I of $\mathcal{A}$, for which I is a left (right) ideal of $\mathcal{A}^{**}$.

A solution of miscible fluid flow through porous media in terms of hypergeometric function $_0F_1$

Mumtaz Ahmad Khan, Mukesh Pal Singh, Ajay Kumar Shukla

A solution involving hypergeometric function $_0F_1$ has been obtained for miscible fluid flow through porous media. Here, the phenomenon of longitudinal dispersion has been discussed, considering the cross-sectional flow velocity as time dependent in a specific form.

Study of some weak separation axioms using β-open sets and β-closure operator

Sanjay Tahiliani

In this paper, we introduce and investigate some weak separation axioms by using the notion of β-open sets and β-closure operator.

Some fundamental properties of preseparated sets

Miguel Caldas, Erdal Ekici, Saeid Jafari

In this paper, we offer the new notion of preseparatedness in topological spaces and we study some of its fundamental properties.

On a generalization of Esseen's inequality

Bogdan Gheorghe Munteanu

The paper deals the estimation of the deviation of the distribution of a sum of independent random variables from the normal law.

Generalized fuzzy topology

G. Palani Chetty

No abstract

The hyperoperation relation and the Corsini's partial or not-partial hypergroupoids (a classification)
Stefanos I. Spartalis

In this paper we introduce the hyperoperation relation R_* obtained from a partial or not-partial hypergroupoid $(H, *)$ in the following way:

(i) $x, y \in H$, $z \in x * y \neq \emptyset$ iff xR_*z, zR_*y,

(ii) $H * H = \emptyset$ iff $R_* = \emptyset$.

In addition we propose a classification of all partial or not partial hypergroupoids defined on the same set H. This classification is based on the R_* and the partial or the not-partial Corsini's hypergroupoids (**C**-hypergroupoids) which are associated with the binary relations defined on the set H. The classification of all partial or not-partial hypergroupoids defined on the set $H = \{1, 2\}$ is presented.

On certain continued fractions
Remy Y. Denis, S.N. Singh, S.P. Singh

In this paper we establish two equivalent continued fractions and deduce certain interesting special cases of the same.

The Möbius category of a semilattice of groups
Emil Daniel Schwab

If $S = \bigcup_{i \in Y} G_i$ is a given semilattice of finite groups G_i with the semilattice Y locally finite, then from S we construct a Möbius category $\mathcal{M}(S)$. Möbius categories of semilattices of groups include a wide class of posets and of triangular categories. Basic properties of $\mathcal{M}(S)$ and some special properties of incidence functions of $\mathcal{M}(S)$ are studied.

Gorenstein injective dimension of generalized local cohomology modules
Kazem Khashyarmanesh, Ahmad Abbasi

Let $\mathfrak{a}$ be an ideal of a d-dimensional Gorenstein ring R and let M be an R-module of finite projective dimension. In this paper, among the other things, we show that, for every R-module N, the Gorenstein injective dimension of generalized local cohomology module $H_{\mathfrak{a}}^d(M, N)$ is less than or equal to the projective dimension M. This implies that, for every R-module N, the top ordinary local cohomology module $H_{\mathfrak{a}}^d(N)$ is Gorenstein injective. Also, we obtain some vanishing results for generalized local cohomology modules.

Affine connection on Weibull manifold

H.N. Abd-Ellah, H.M. Moustafa

The new in the present paper is giving a differential-geometrical framework for analyzing statistical problems related to Weibull distribution using one-parameter family of affine connections. The geometry of the statistical manifold is given. A development of the relation between the J-divergence and geodesic distance is obtained. Finally, the curvatures of the affine connections for each of the curved J-space and S-space (constant curvature) on Weibull manifold are derived.

Quasi-permutation representations for the group $K_2^2(q)$

M. Ghorbany

A square matrix over the complex field with non-negative integral trace is called a quasi-permutation matrix. For a given finite group G, let $q(G)$ denote the minimal degree of a faithful representation of G by quasi-permutation matrices over the rational field Q, and let $c(G)$ be the minimal degree of a faithful representation of G by complex quasi-permutation matrices. Finally let $r(G)$ denote the minimal degree of a faithful rational valued character of G. In this paper $q(G)$, $c(G)$ and $r(G)$ are calculated for the group $K_2^2(q)$, where
$$K_2^2(q) = SL(2,q).\langle\theta\rangle = \langle SL(2,q), \theta|\theta^2 = 1, \theta^{-1}A\theta = (A^t)^{-1}\rangle.$$

The characterization of regular and intra-regular ordered semigroups

Yunqiang Yin, Hongxing Li

In this paper, some properties of fuzzy left (resp.right) ideals, fuzzy bi-ideals and fuzzy quasi-ideals of an ordered semigroup are investigated. Also, the characterization of regular and intra-regular ordered semigroups in terms of fuzzy left ideals, fuzzy right ideals, fuzzy bi-ideals and fuzzy quasi-ideals is also studied.

On the strictly differentiable functions on $\mathbb{Z}_p$

Fana Tangara

Let K be a complete valued field, extension of $\mathbb{Q}_p$. For $q \in K$, $|q - 1| < 1$, K. Conrad has given a q-analogue of Mahler's expansion. If $f \in \mathcal{C}(\mathbb{Z}_p, K)$, one has for $x \in \mathbb{Z}_p$ $f(x) = \sum_{n \geq 0} a_n C_n(x)$, where for q not a root of unity,

$$C_0(x) = 1,$$
$$C_n(x) = \binom{x}{n}_q = \frac{(q^x - 1)\ldots(q^x - q^{n-1})}{(q^n - 1)\ldots(q^n - q^{n-1})}, \, n \geq 1.$$

We give here necessary and sufficient conditions on the coefficients of the q-expansion for f to be strictly differentiable, whenever q is not a root of unity.

Some applications of peirce decomposition in generalized rings and algebras
Cristina Flaut, Mirela Ştefănescu

We show that Peirce decompositions associated to idempotents hold for the power-associative algebras, implying some properties for the endomorphisms associated to these idempotents. We answer also some natural questions arising in the case of algebras with certain more properties. In Section 3, we consider idempotents in nearrings and infra-nearrings, finding similar decompositions. This shows that Peirce decomposition is true without the associativity of the multiplication or the commutativity of the addition and both distributivity laws for multiplication.

Computing the non-abelian tensor square of general linear groups
A. Erfanian, R. Rezaei, H. Jafari

The aim of this paper is to consider an open problem which was posed by R. Brown, D.L. Johnson and E.F. Robertson (1987) in [4]. The problem is to determine the non-abelian tensor square $G \otimes G$ for the group $GL(n, q)$ and other linear groups. Later, T. Hannebauer (1990) in [5] computed tensor square of groups SL(2,q), PSL(2,q), GL(2,q) and PGL(2,q) for all $q \geqslant 5$ and $q \neq 9$. In this article we will improve the results given in [5] to all linear groups SL(n,q), PSL(n,q), GL(n,q) and PGL(n,q) except for some small values of (n, q).

Error analysis of three-step explicit methods for ordinary differential equations
M. SH. Dahaghin, M. Mohseni Moghadam

Multi-step methods are studied more or less beforehand [1], [2], [6]. In this paper we will explain some general form of the three-step explicit methods by analysis of coefficients of these methods. We use these methods to find numerical solution of ordinary differential equations of the form $y' = f(t, y(t))$ with initial value $y(t_0) = y_0$ and after all we analyze changes of errors with respect to changes of coefficients of our methods.

A fuzzy estimation for the reliability function
R. Amirzadeh, S.E. Moafi, A. Parchami, M. Mashinchi

In this paper, using a family of confidence intervals, we construct a triangular shaped fuzzy number as the estimator of mean lifetime by Buckley's estimation approach. Also by two approaches (Buckley's estimation approach and Zadeh's extension principle), we obtain the same fuzzy estimator for reliability function of a component. Our attention is on the case where the lifetime has an exponential distribution. Then we present a method for comparing the fuzzy estimated reliability functions. Numerical examples are given to show the performance of the method.

Finite groups whose subnormal subgroups are S-permutable
M. Ramadan, A.A. Heliel, Enjy Ahmed

Let G be a finite group. A subgroup of G is said to be S-permutable in G if it permutes with every Sylow subgroup of G. A group G is said to be a PST-group if every subnormal subgroup of G is S-permutable in G. We say that G is a PST_0-group if its Frattini quotient group $G/\Phi(G)$ is a PST-group. In this paper we investigate the structure of finite groups that are the mutually permutable products of two solvable PST-groups (solvable PST_0-groups).

n-ary canonical hypergroups
Violeta Leoreanu Fotea

In this paper, we introduce and characterize a new class of n-ary hypergroups, which we call the class of n-ary canonical hypergroups. Several properties and some connections with lattices are presented.

On $\mathcal{D}$-sets, $\mathcal{DS}$-sets and decompositions of continuous, $\mathcal{A}$-continuous and $\mathcal{AB}$-continuous functions
Erdal Ekici, Saeid Jafari

The main purpose of this paper is to introduce the notions of $\mathcal{D}$-sets, $\mathcal{DS}$-sets, $\mathcal{D}$-continuity and $\mathcal{DS}$-continuity and to obtain decompositions of continuous functions, $\mathcal{A}$-continuous functions and $\mathcal{AB}$-continuous functions. Also, properties of the classes of $\mathcal{D}$-sets and $\mathcal{DS}$-sets are discussed.