

ABSTRAK

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Judul : Ruang Quasilinear dan Ruang Quasivektor Bernorm di \mathbb{R}^n

Ruang quasilinear (berstruktur monoid) merupakan perluasan ruang vektor. Suatu bola pejal pada ruang Euclid \mathbb{R}^n untuk suatu bilangan bulat n memiliki pusat dan jari-jari. Himpunan seluruh bola pejal di \mathbb{R}^n dilengkapi oleh operasi penjumlahan dan perkalian skalar tertentu membentuk suatu ruang quasilinear yang bukan merupakan suatu ruang vektor. Produk kartesian dari ruang quasilinear yang disertai suatu relasi ekuivalen tertentu di dalamnya, operasi penjumlahan, dan perkalian skalar merupakan suatu ruang quasivektor. Relasi ekuivalen pada ruang quasivektor tersebut menyebabkannya memenuhi hukum inversi. Operator penting pada ruang quasivektor adalah negasi, opposit, dan konjugat. Ketiga operator tersebut bermanfaat dalam menentukan ruang linear, ruang simetris, rumusan quasidistributif, dan ruang vektor terassosiasi. Pemetaan yang mengaitkan himpunan bola pejal dengan produk kartesiannya menghasilkan unsur proper pada ruang quasivektor dan sifat-sifatnya. Suatu norm didefinisikan untuk ruang quasilinear dan ruang quasivektor tersebut sehingga diperoleh ruang quasilinear dan ruang quasivektor bernorm. Ruang linear dan ruang simetris dari masing-masing ruang quasilinear dan ruang quasivektor diperoleh sehingga dapat ditentukan basis dan dimensi untuk masing-masing ruang quasilinear dan ruang quasivektor tersebut.

Kata kunci : Ruang quasilinear, ruang quasivektor, bola pejal di \mathbb{R}^n , ruang vektor terassosiasi, norm, relasi ekuivalen, ruang linear, ruang simetris, quasidistributif, unsur proper, basis dan dimensi.

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ABSTRACT

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**Title : Normed Quasilinear Space and Quasivector Space
On \mathbb{R}^n**

The quasilinear space (of monoid structure) is an extension of the vector space. A solid ball in Euclidean space \mathbb{R}^n for an integer n has a center and a radius. The set of all solid balls in \mathbb{R}^n is complemented by a certain addition and scalar multiplication operation forming a quasilinear space that is not a vector space. The cartesian product of the quasilinear space accompanied by a certain equivalent relation in it, the addition operation, and the scalar multiplication is a quasivector space. The equivalent relation of the quasivector space causes it to comply with the inversion law. Important operators in quasivector space are negation, opposit, and conjugation. The three operators are useful in determining linear space, symmetric space, quasidistributive formula, and associated vector space. The mapping that links the set of solid balls with their cartesian products produces the proper elements in the quasivector space and its properties. A norm is defined for the quasilinear space and quasivector space so as to obtain the normed quasilinear space and the quasivector space. The linear space and symmetric space of each quasilinear and quasivector space are obtained so that the base and dimension can be determined for each quasilinear space and quasivector space.

Keywords : Quasilinear space, quasivector space, solid ball in \mathbb{R}^n , associated vector space, norm, equivalent relation, linear space, symmetric space, quasidistributive, proper element, base and dimension.

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