



Algebraic Structure in Mathematics

Mrs.Ravinder, Msc. Mathemaics, LectureGSSS,Naguran

Abstract:

In mathematics, and more specifically in abstract algebra, an **algebraic structure** is a set (called **carrier set** or **underlying set**) with one or more finitary operations defined on it that satisfies a list of axioms.^[1]

Examples of algebraic structures include groups, rings, fields, and lattices. More complex structures can be defined by introducing multiple operations, different underlying sets, or by altering the defining axioms. Examples of more complex algebraic structures include vector spaces, modules, and algebras.

The properties of specific algebraic structures are studied in abstract algebra. The general theory of algebraic structures has been formalized in universal algebra. The language of category theory is used to express and study relationships between different classes of algebraic and non-algebraic objects. This because it is sometimes possible to find strong connections between some classes of objects, sometimes of different kinds. For example, Galois theory establishes a connection between certain fields and groups: two algebraic structures of different kinds.

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