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A PATTERN TO DRAW LATTICE DIAGRAMS IN A FIXED FIELD

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A polynomial with order n is isomorphic to symmetric group of order n (S_n). There are many ways to find the subgroup of a symmetric group. The fixed field for a given subgroup can be found using Galois Theory. Further, subgroups are found using Sylow theorem, Van der Waerden criterion, maximal ideal and group actions etc. In this work a method to draw lattice diagrams with the help of fixed field concept which intern found using subgroups is proposed. Drawing lattice diagram for polynomials is not an easy task. Complex polynomials face difficulties in drawing lattice diagram. In this proposed approach, a pattern which can be used to draw lattice diagram for complex polynomials is found in fixed field. Thus, the pattern helps to reach the fixed field in an easy and quick manner comparatively. Three types of patterns namely for polynomials which are isomorphic to $\mathbb{Z}_2 \times \mathbb{Z}_2 \times \dots \times \mathbb{Z}_2$, polynomials with unique field of order P^n and polynomials of order n are found using the proposed approach.

Keywords: *Fixed field, Isomorphic, Lattice diagram, Polynomial, Subgroup.*