

Generalized X-join of graphs and their automorphisms*

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Abstract

In this paper, we first introduce a new product of finite graphs as a generalization of the X-join of graphs. We then give necessary and sufficient conditions for a graph to be isomorphic to a generalized X-join. As a main result, we give necessary and sufficient conditions under which the full automorphism group of a generalized X-join is equal to the generalized wreath product of the automorphism groups of its factors.

Keywords: Automorphism, generalized wreath product, graph, lexicographic product, permutation group, X-join.

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Posplošeni X -spoji grafov in njihovi avtomorfizmi*

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Povzetek

V tem članku najprej vpeljemo nov produkt končnih grafov kot posplošitev X -spoja grafov. Potem podamo potrebne in zadostne pogoje za to, da je graf izomorfen posplošenemu X -spoju. Kot glavni rezultat, podamo potrebne in zadostne pogoje za to, da je polna grupa avtomorfizmov posplošenega X -spoja enaka posplošenemu venčnemu produktu grup avtomorfizmov njegovih faktorjev.

Ključne besede: Avtomorfizem, posplošeni venčni produkt, graf, leksikografski produkt, permutacijska grupa, X -spoj.

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