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THE COMPLETE PRODUCT OF TWO FUZZY GRAPHS AND ITS RELATIONSHIP WITH FUZZY GRAPH ISOMORPHISM

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Abstract: Fuzzy graph was introduced by Kaufmann [7] in 1973. In this paper, we introduced the concept of the complete product of two fuzzy graphs with an Illustrative example. We proved the result that If $G : (\sigma, \mu) = (U, E_U)$, $H : (\tau, \vartheta) = (V, E_V)$, $G' : (\sigma', \mu') = (U', E_{U'})$ and $H' : (\tau', \vartheta') = (V', E_{V'})$ are any four fuzzy graphs such that $G : (\sigma, \mu) \cong G' : (\sigma', \mu')$ and $H : (\tau, \vartheta) \cong H' : (\tau', \vartheta')$ under the fuzzy graph isomorphisms f and h respectively, then $G \times_P H \cong G' \times_P H'$. As the proof is too long, we have demonstrated the result in two by parting into two hypotheses.

Keywords and Phrases: Fuzzy relation, Fuzzy graph, Uniform vertex fuzzy graph, Fuzzy graph isomorphism, The complete product of two fuzzy graphs.

2020 Mathematics Subject Classification: 05C70, 05C72.

1. Introduction

The concept of a Graph is introduced for the first time by Leonhard Euler [4] in the year 1736. It is quite well known that graphs are simply models of relations. A graph is a convenient way of representing the information involving relationship