Polynomial Generalized Splines on Star Graph and Wheel Graph

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ABSTRACT

Let R be a commutative ring with identity and G be an edge labeled arbitrary graph. Let the edges of arbitrary graph G be labeled with ideals of ring, R and vertices be labeled by elements of the ring R. If difference of two vertex labels of each and every two adjacent vertices of G is contained in corresponding labeled edge ideal of G, then the vertex labelings are called generalized splines on G over R. The set of generalized splines is a ring and also an R-module. Also set of generalized splines contain a free submodule whose rank is the number of vertices in G. I study and describe about existence of trivial and non-trivial generalized splines on Star graph and Wheel graph which is constructed from cycle graph and star graph over real polynomial ring, R[x] using Chinese remainder theorem for real polynomials. I construct a flow-up basis for generalized spline module on wheel graph over real polynomial ring, R[x].

Keywords: Commutative ring with identity; Generalized splines; Star graph

How to Cite

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