

Arbitrarily vertex decomposable caterpillars with four or five leaves

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Abstract

A graph G of order n is called arbitrarily vertex decomposable if for each sequence (a_1, \dots, a_k) of positive integers such that $a_1 + \dots + a_k = n$ there exists a partition (V_1, \dots, V_k) of the vertex set of G such that for each $i \in \{1, \dots, k\}$, V_i induces a connected subgraph of G on a_i vertices.

D. Barth and H. Fournier showed that if a tree T is arbitrarily vertex decomposable, then $\Delta(T) \leq 4$. In this paper we give a complete characterization of arbitrarily vertex decomposable caterpillars with four leaves. We also describe two families of arbitrarily vertex decomposable trees with maximum degree three or four.