

A simplicial graph G is a (geometric) graph with its set of vertices fixed. Two vertices of G are adjacent if they belong to the same edge. For G and H simplicial graphs, a function from the set of vertices of H into the set of vertices of G is simplicial if any two adjacent vertices are taken either to one vertex or to a pair of adjacent vertices. Each simplicial function can be linearly extended to a map from H to G . This extension is called a simplicial map.

Suppose $f : H \rightarrow G$ is a simplicial map between graphs and g is an embedding of G in the plane. It is not always true that H can be embedded in the plane with an embedding arbitrarily close to $g \circ f$. We will talk about combinatorial obstructions preventing such embeddings and give a full algorithmic characterization in the case when H is an arc.