Set-Defined Graph Colorings

Gary Chartrand, Jamie Hallas*, Ping Zhang, Western Michigan University

Over the years, there have been many graph colorings that have led to other graph colorings of interest in a variety of ways. In many situations, an edge coloring induces a vertex coloring with a prescribed property. Such colorings are often referred to as color-induced graph colorings. We study a color-induced graph coloring by means of a familiar set operation that gives rise to either a proper vertex coloring or a vertex-distinguishing coloring. The goal is to minimize the number of colors required of such a coloring. Results, conjectures and open problems are presented in this area of research.

Keywords: set-defined coloring, proper coloring, vertex-distinguishing coloring.