

Some Colorings That Are Sum Colorings

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For a positive integer-valued vertex coloring c of a nontrivial connected graph G , where adjacent vertices may be colored the same, the color sum $s(v)$ of a vertex v is the sum of the colors $c(u)$ of all vertices u of G belonging to the closed neighborhood $N[v]$ of v . If $s(x) \neq s(y)$ for every two adjacent vertices x and y for which $N[x] \neq N[y]$, then c is a closed sigma coloring of G . The minimum number of colors required of a closed sigma coloring of G is the closed sigma chromatic number of G . Results, conjectures and open questions are presented in this area of research.