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Comparisons of some classes of two-variable chromatic polynomials. (Chinese. English summary) [Zbl 1340.05132]

Summary: By comparing the Tutte, Potts, matching and Dohmen two-variable chromatic polynomials, the present work studies famous two-variable chromatic polynomials of graphs. Their properties and the relationships between those definitions are investigated. Especially, a grid proof to reduce-contract edge formula of Tutte, as well as the others reduce-contract edge formulas and proofs are presented. Moreover, we study some concrete compute formulas of special graphs to each of them based on those reduce-contract edge formulas, and those reduce-contract edge formulas show the application in simplifying calculation.

MSC:
05C31 Graph polynomials
05C15 Coloring of graphs and hypergraphs

Keywords:
two-variable chromatic polynomial; reduce-contract edge formula; Pascal matrix