

Game Chromatic Index of K_6

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Edge colouring game is a two-person game, in which Bob and Alice are taking turns to pick one colour from a set of k colours and put it on an uncoloured edge of a graph G such that no adjacent edges receive the same colour. Alice wins if all edges of G can be coloured; otherwise, Bob does. The minimum k that allows Alice to win the game is called the Game Chromatic Index of G , denoted by $\chi'(G)$. This problem on different types of graphs, such as trees, outerplanar graphs, wheels, have been being studied and some were solved in the last decade. For complete graphs K_n , the results for $n \leq 5$ was obtained. Christiane Schallück (2008) who used a computer programme found that $\chi'(K_6) = 7$ regardless whoever, Alice or Bob, takes the first move. In this talk, I would like to discuss an analytical proof of this result.

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