歸檔

國立中央大學數學系 96 學年度博士班入學考試筆試試題

科目：圖論

Graph Theory

Problem 1 Show that planar graphs are 5-choosable. (20%)

Problem 2 State and prove the Matrix Tree Theorem. (20%)

Problem 3 Show that the Ramsey numbers $R(3,3) = 6$ and $R(3,4) = 9$. (10%)

Problem 4 Show that every graph with chromatic number at least 4 contains a K_4-subdivision. (10%)

Problem 5 Show that every 3-regular graph with no cut-edges has a 1-factor. (10%)

Problem 6 Prove that $\chi(G) = \omega(G)$ when $\overline{G}$ is bipartite. (10%)

Problem 7 Show that for any positive integer k, there exists a k-chromatic triangle-free graph. (10%)

Problem 8 Show that every digraph G has a dipath with at least $\chi(G)$ vertices. (10%)