DEPARTMENT OF MATHEMATICS

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A GENERALIZATION OF A GRAPH RESULT OF HALIN AND JUNG

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Abstract. This paper provides a partial generalization to matroid theory of the result of Halin and Jung that each simple graph with minimum vertex degree at least 4 has K_5 or the octahedron $K_{2,2,2}$ as a minor.

. Introduction

G, $\widetilde{G}$.

$$A_{10} \quad \left[\begin{array}{c|c} I_5 & \end{array}\right] \qquad A_{12} \quad \left[\begin{array}{c|c} I_6 & \end{array}\right]$$

Figure 1. $GF(\ )$ R_{10} R_{12}.

Lemma 2.2. *If M a 3-c nn ec ed b n a a d, e M a n F_7^*- n f and n f e e M e a $M \sim F_7$.*

R_{10} R_{12}. A_{10} A_{12} $GF(\ )$- R_{10} R_{12}, .

Lemma 2.3. *Le e be an e e e f R_{10}. T en $R_{10}/e \sim M^*(K_{3,3})$.*

Lemma 2.4. *Le M be a 3-c nn ec ed e a a d. T en e e M a c c a c, M a a n c n e f R_{10} and R_{12}.*

. .

P f. M . - . $g^*(M) \geq$. M $M^*(G)$ G $M^*(K_{3,3})$. G $K_{3,3}$. . . G $G \sim K_5$. M $M \sim M^*(K_5)$. M . M $M(K_5)$- $M(K_{2,2,2})$- . , $M \sim M^*(K_5)$, M . M .

M - $g^*(M) \geq$ . . M . ( ) - . - . ()