TECHNICAL REPORT

A GENERALIZATION OF A GRAPH RESULT OF HALIN AND JUNG

DR. GALEN E. TURNER, III

AND

DR. ALLAN D. MILLS

SEPTEMBER 2003

No. 2003-4



TENNESSEE TECHNOLOGICAL UNIVERSITY Cookeville, TN 38505

A GENERALIZATION OF A GRAPH RESULT OF HALIN AND JUNG

GALEN E. TURNER III AND ALLAN D. MILLS

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

THE THE THE METERS G . THE THE METERS G . THE METERS G . THE G

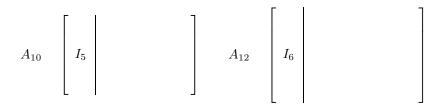


Figure 1. GF() p \mathbb{T} R_{10} \mathbb{T} R_{12} .

Lemma 2.2. If M a 3-c nn ec ed b n a a: d, en M a n F_7^* $n: fand n fe e M : e a : M \sim F_7.$

TOTAL TO R_{10} , R_{12} , R_{10} , R_{12} , R_{10} . To A_{12} . The second of $GF(\)$ - $F(\)$. The R_{10} . The R_{12} , Đ I

Lemma 2.3. Le *e* be an *e* e or $f R_{10}$. T or $R_{10}/e \sim M^*(K_{3.3})$.

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

P f. M . - DD M $M^*(G)$ M . P . M $M \sim M^*(K_5)$. M 1 . \mathfrak{p} 1 \mathfrak{p} . \mathfrak{m} \mathfrak{p} 1 \mathfrak{m} . \mathfrak{m} \mathfrak{p} 1 \mathfrak{m} . \mathfrak{m} \mathfrak{p} 1 \mathfrak{m} . \mathfrak{m} \mathfrak{m} \mathfrak{m} \mathfrak{m} . \mathfrak{m} \mathfrak{m} . \mathfrak{m} \mathfrak{m} . \mathfrak{m} \mathfrak{m} . \mathfrak{m} $M: \mathfrak{p}:$

()