

1014-Z1-610

**Lynne L Doty** (Lynne.Doty@marist.edu), Mathematics Department, Poughkeepsie, NY 12601,  
and **Kevin K Ferland\*** (kferland@bloomu.edu), Mathematics Department, Bloomsburg, PA  
17815. *Constructing 5-Regular 5/2-Tough Graphs.*

For  $\lceil 5/2 \rceil \leq m < 3n$ , the maximum toughness among graphs with  $n$  vertices and  $m$  edges is  $5/2$  in all but finitely many cases. This is in stark contrast with the fact that there is a  $3/2$ -tough graph on  $n$  vertices and  $\lceil 3n/2 \rceil$  edges if and only if  $n = 0, 5$  modulo 6. However, constructions related to those used in the cubic case can also be employed in the 5-regular case. Moreover, our constructions provide an infinite family of graphs that are supertough and not  $K_{1,3}$ -free. (Received September 21, 2005)