ON SIZE OF GRAPHS WITH GIRTH GREATER THAN 8

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We present new lower bounds on the maximum size of graphs with prescribed order, n, and girth, $g > t$, for $t \in \{8; 9; 10\}$ and $n \leq 200$. We use these bounds and some new constructions to establish the maximum size of the graphs with orders; $n \in \{23; 24; 25; 26\}$ and $t = 8; n \in \{26; 27; 28; 29\}$ and $t = 9$; and $n = 30$ and $t = 10$. We also find an infinite family of graphs with maximum size, considering girth and order restraints based on the subdivision of the Petersen graph.

Keywords: Extremal graph, Extremal number, girth.