1 Nonsingularity of Divisor Tournaments

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Matrix theoretic properties and examples of divisor tournaments are discussed. Emphasis is placed on results and conjectures about the nonsingularity of the adjacency matrix for a divisor tournament. Definition: For an integer n > 2, the divisor tournament $D(T_n)$ (a directed graph on the vertices $2, 3, \ldots, n$) is defined by: i is adjacent to j if i divides j, otherwise jis adjacent to i for 2i < jn. No vertex is adjacent to itself. Definition: The adjacency matrix T_n of the directed graph $D(T_n)$ with vertex set $\{2, 3, \ldots, n\}$ is the (n-1)(n-1) matrix $[t_{ij}]$ defined by $t_{ij} = 1$ and $t_{ji} = 0$ if iOj, $t_{ij} = 0$ and $t_{ji} = 1$ if i∤ j for 2i < jn. $t_{ii} = 0$ for $i \in \{2, 3, \ldots, n\}$.