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13. Combinatorics

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Graphs with degree sets of maximal cardinality II.

Graph $G = (V, E)$ is finite, undirected, and simple. Its degree set is the set of degrees of the vertices of G. For each integer $p > 1$, there are exactly two graphs $G*$ and $G**$ of order p whose degree sets have maximal cardinality. We derive results that characterize $G*$ and $G**$. We further exhibit an algorithm that, given the two graphs $G*$ and $G**$ of order $p > 1$, generates the two graphs of order $p + 1$.

Reference: D. Spresser, Another handshaking problem: graphs of order p whose degree sets contain $p-1$ elements, *Int. J. Math. Educ. Sci. Technol.* **27** (1996), 247–252.