

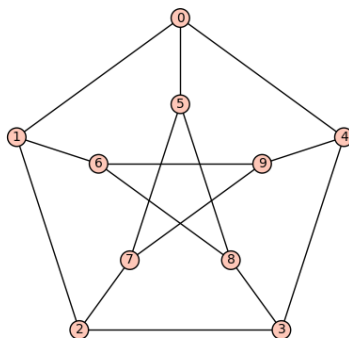
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LARSON—MATH 750—CLASSROOM WORKSHEET 01
Independence Number of a Graph

Notation. We use $V = V(G)$ for the vertex set of a graph G and $E = E(G)$ for the edge set. The *order* n of the graph is the cardinality of V and the *size* m is the cardinality of the edge set.

Definition. An *independent set* in a graph is a set of vertices which are pair-wise non-adjacent. A *maximum independent set* (MIS) is a largest cardinality independent set. The *independence number* α is the cardinality of an MIS.



1. Let G be the Petersen graph. Find a maximum independent set I of G and the independence number $\alpha = \alpha(G)$.
2. Find a spanning tree T for the Petersen graph.
3. Find $\alpha(T)$.
4. Argue that, for any spanning subgraph H of a graph G , that $\alpha(G) \leq \alpha(H)$.

