Graph Theory Definitions

Alex Creiner

November 15, 2021

A **clique** of a graph is a set of pairwise adjacent vertices. An **independent set** (or a **stable set**) in a graph is a set of pairwise nonadjacent vertices. A graph is **complete** if all of it's vertices are pairwise adjacent. The complete graph with n vertices is denoted K_n. A **complete bipartite graph** or a **biclique** is a bipartite graph such that vertices are adjacent iff they are in different partite sets. Let $K_{r,s}$ denote the complete bipartite graph with partite sets of size r and s.

The **diameter** of a graph is the maximum distance between any two vertices. (If there exist two vertices with no path connecting them, then distance is defined as ∞.) The **eccentricity** of a vertex u, denoted $\epsilon(u)$, is the maximum distance between u and another vertex of the graph. The **radius** of a graph is the minimum of it's eccentricities ranging over all vertices.