



Definition

Let (V, E) be a directed graph. A *directed path* between vertex v and vertex $w \neq v$ is a finite sequence of distinct vertices, whose first coordinate is v and whose last coordinate is w , and whose consecutive coordinates (as ordered pairs) are edges in the graph. We say that a path between v and w is from v to w . The *length* of the path is one less than the number of vertices: namely, the number of edges.

Two vertices are *connected* in a graph if there exists at least one path between them. A directed graph is *connected* if there is a path between every pair of vertices. A graph is *acyclic* if none of its paths cycle.

Other terminology

Some authors allow paths to contain repeated vertices, and call a path with distinct vertices a *simple path*. Similarly, some authors allow a cycle to contain repeated vertices, and call a path with distinct vertices a *simple cycle* or *circuit*. Some authors use the term *loop* instead of *cycle*.

