Cycles and circuits

- A **cycle** is a "closed path" (i.e., a sequence of vertices that begins and ends at the same vertex). Thus, a cycle can be written as $v_1, v_2, \ldots, v_k, v_{k+1}$ so that $(v_i, v_{i+1}) \in E$ for all $i = 1, 2, \ldots, k$, $v_{k+1} = v_1$, and otherwise there are no repeated vertices.
- An **acyclic** graph is one that has no cycles.
- A **circuit** in a graph G is a "closed walk" (i.e., a walk that begins and ends at the same vertex). Thus, a circuit can be written as a sequence of vertices $v_1, v_2, \ldots, v_k, v_{k+1}$ so that $(v_i, v_{i+1}) \in E$ for all $i = 1, 2, \ldots, k$, $v_{k+1} = v_1$, and where a vertex can appear more than once.