Graph Conceptuals

Answer the following questions as either **True** or **False** and provide a brief explanation:

1. If a graph with n vertices has $n - 1$ edges, it **must** be a tree.

2. The adjacency matrix representation is **typically** better than the adjacency list representation when the graph is very connected.

3. Every edge is looked at exactly twice in **every** iteration of DFS on a connected, undirected graph.

4. In BFS, let $d(v)$ be the minimum number of edges between a vertex v and the start vertex. For any two vertices u, v in the fringe, $|d(u) - d(v)|$ is **always less than** 2.

5. Given a fully connected, directed graph (a directed edge exists between every pair of vertices), a topological sort can never exist.