- complete graph K_n: a simple, undirected graph where every pair of vertices is connected by an edge.

- degree sequence

  ↓ can construct a graph

  graphical

  ↓ this graph is connected

  potentially connected

- C_n: a cycle of n edges
- matching (independent edge set): A set of edges that do not share endpoints
- minimum vertex cover: Find the smallest set of vertices includes at least one endpoint of every edge in the graph.

- perfect matching: a matching saturating all vertices.

- bad set: refer to Hall's Theorem

- **k-regular graph**: every vertex has exactly k neighbors.
- **complete bipartite graph** $K_{m,n}$: every vertex in one set is connected to the every vertex in the other set
- **independent set I**: a set of vertices s.t. for every 2 of them, they are not adjacent.
- **edge cover C_E**: an edge t s.t. every vertex v is incident to some edge in C_E.
- **cut vertex**: a subset of vertices of a connected graph which, if removed (cut), together with its incident edges, disconnects the graph.