* Definitions:
  + A spanning tree of a graph G is a subset T that is connected and acyclic (no loops).
  + MST (Minimum Spanning Tree): The total weight of the edges in MST is minimum.
* Assume all edge weights are distinct 🡪 MST for a given G is unique.
* Two properties: Know these 2 properties for the exam
  + Cycle property:
    - Let C be any cycle in a graph, and let f be the max-cost edge belonging to C. Then the MST does not contain f.
  + Cut property:
    - Let S be any subset of vertices, and e be the n=min-cost edge with exactly one endpoint in S. Then the MST surely contains e.
* When finding the MST for a given subset S, find all edges that have exactly one endpoint in S (because of the cut property).
* Cycle property:
  + Let C be any cycle in a graph, and let f be the max-cost edge belonging to C. Then the MST (named) T\*does not contain f.
  + Proof by contradiction:
    - Suppose f belongs to T\*. Let’s see what happens.
    - Deleting f from T\* disconnect T\*. Let S be one side of the cut.
    - Some other edge in C, same as e, has exactly one endpoint in S.
    - We got a tree T, where T=(T\*)(union){e} – {f}.
    - Since Ce < Cf, cost(T) < cost(T\*)
    - Contradict the minimality of T\*.