

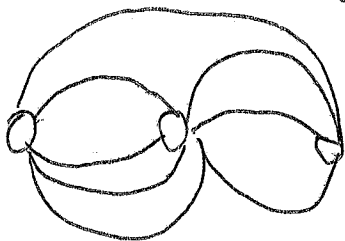
Spanning trees

Def Spanning tree = subtree of a graph G containing all the vertices of G .

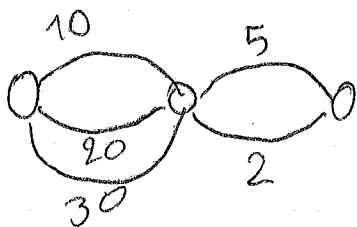
Remark A spanning tree has $\#vertices - 1$ edges.

$$R = \#edges - (\#vertices - 1).$$

There can be many spanning trees.



When G is a weighted graph

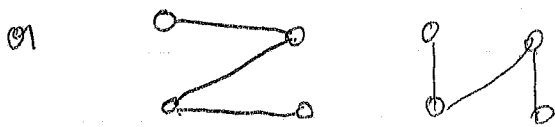
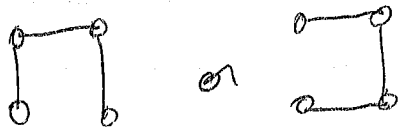
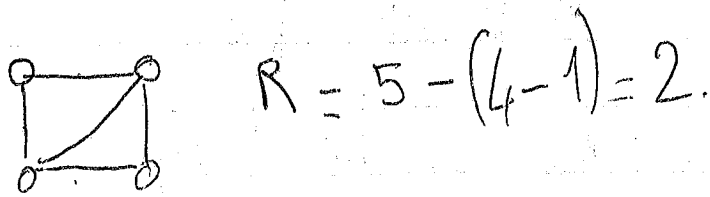


Minimal spanning tree = spanning tree minimizing the total length of all the edges.

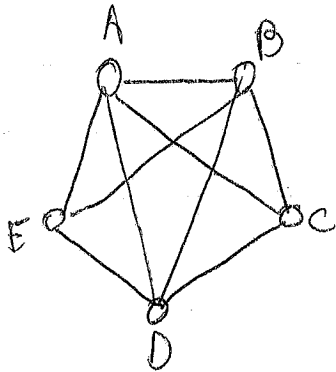


How to find all the spanning trees.

compute $R = \# \text{ edges} - (\# \text{ vertices} - 1)$.



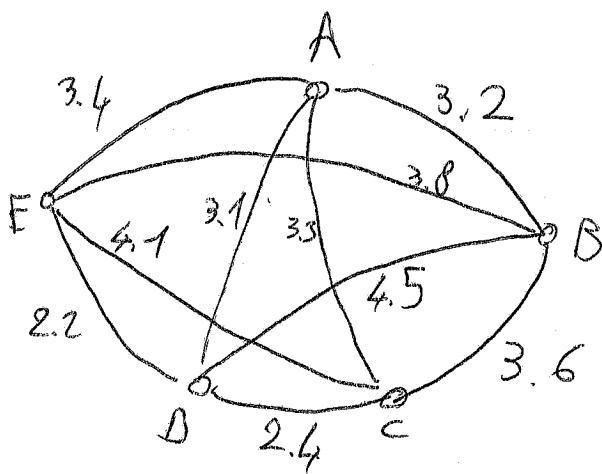
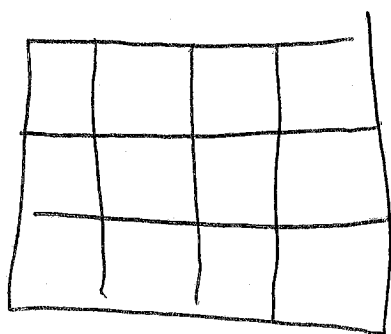
Ex 21



Kruskal algorithm (Similar to the cheapest link)

- * Find the cheapest edge (most expensive)
- * Avoid circuit.

Example



ED DC AD AB ~~AC~~ ~~AE~~

1948

1949

1950

1951

1952