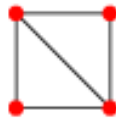


## Spanning Trees

A spanning tree of an  $n$ -vertex graph is a subset of  $n-1$  edges that form a tree.

Consider the 4 vertex graph



Each of the following are spanning trees of this graph.



## Number of non-isomorphic spanning trees

The **matrix tree theorem** (also called Kirchhoff's matrix-tree theorem) states that the number of non-identical spanning trees of a graph  $\mathbf{G}$  is equal to any cofactor of the degree matrix of  $\mathbf{G}$  minus the adjacency matrix of  $\mathbf{G}$ .

(Buekenhout and Parker 1998),