At no stage will this process stop because every subset \( \{x_1, \ldots, x_n\} \) is satisfiable.

1. So at every level \( n \) there is at least one open branch.

(a) The tree is finitely generated in the strong sense - at most two successors at every node because of the tableau rules. [What about for refinement rules?]

(b) Tree is unbounded in size (number of nodes). We don’t say infinite because we never “finish it.”

(c) Not every path is bounded because if every path is bounded, then the tree is finite (Brouwer).

- König’s Lemma

Every unbounded finitely generated co-tree (fan) has an unbounded path.

- Fan Theorem: Every finitely generated tree in which every path is bounded is finite.

Corollary: If the finitely generated tree is not finite, then not every path is bounded. (But can we find an unbounded path? Not necessarily.)