

1. Construct all (non-isomorphic) rooted trees of heights from one to four, that have five vertices. [1]. Note that there is one of height one, four of height two, three of height three, and one of height four.
2. Construct two non-isomorphic rooted trees both having twelve vertices, six leaves, and height four [1].
3. Calculate the minimum height of a ternary rooted tree with ten leaves.
4. Consider a graph with eight vertices and twelve edges connected such that it can be drawn as a cube. Draw this graph, find a spanning tree of it and then high-light the edges on the drawing that are part of the tree [1].
5. Sketch all sixteen distinct spanning trees of the complete graph  $K_4$ .

**References**

- [1] N. Biggs. *Discrete Mathematics*. Oxford science publications. OUP Oxford, 2002.