

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  $K_4$ .
6. Draw evaluation trees representing each of the following reverse Polish notation expressions.
  - (a)  $3\ 5\ +$
  - (b)  $3\ 5\ +\ 6\ \times$
  - (c)  $3\ 5\ +\ 6\ 4\ -\ \div$
  - (d)  $100\ 16\ 2\ \times\ +\ 11\ 3\ \times\ \div\ 75\ \times$

## References

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