

Give arguments to all solutions. List all collaborators.

**The exercises below are to be handed in
Tuesday October 17, 13.15 at the latest.**

1. Biggs 21.1.3
2. Let \mathcal{O} be the octahedron with vertices in the six points $(\pm 1, 0, 0)$, $(0, \pm 1, 0)$, $(0, 0, \pm 2)$. Let G be the group of all symmetries on \mathcal{O} . In how many ways can we colour the vertices of \mathcal{O} using at most two colours?

We consider two colourings equivalent if one can be obtained from the other by displacing the octahedron (turning it upside down and/or rotating it) without deformation, that is by letting an element in G act on it.
3. Biggs 21.7.16
4. Biggs 21.7.19–21 (8p.)

Further problems

1. Biggs 24.2.1, 3
2. Biggs 24.3.2
3. Biggs 24.4.1, 2, 3