1. Draw the graph of:

   (a) $\Delta_2 \times \Delta_2$.

   (b) $(\Delta_2 \times \Delta_2)^\Delta$.

   (Remember to justify your answers.)

2. Let $P$ be a polyhedron with at least one vertex. Show that the graph consisting of the vertices and bounded edges of $P$ is connected.

3. Show that the dual of a (simple) planar, 3-connected graph (with at least 4 edges) is again 3-connected without using Steinitz’ Theorem.

4. Let $P \subseteq \mathbb{R}^d$ be a polytope whose vertices have all of their coordinates in the set $\{0, 1, \ldots, k\}$. Show that the diameter of $P$ is at most $kd$. 