Sheet 2 — f-vectors, Triangulations

1. Give a formula for the f-vector associated to a d-simplex. Do the same for the boundary of a d-simplex (this is a sphere now).

2. Compute the f-vectors of 2 triangulations of a regular 3-cube.

3. Given a triangulation T of a point set $\mathcal{A} \subseteq \mathbb{R}^2$, prove that

$$e_i = 3n - 3 - 2e_b,$$

   for $n = |\mathcal{A}|$ and e_i, e_b the number of interior and boundary edges.

4. For the point configuration $\mathcal{A} = \{(2,0), (0,2), (-2,0), (0,-2), (-1,0)\}$, compute the Voronoi diagram and its dual triangulation.