5. Exercise on Network Coding Theory

Problem 8: (Lattices)

Consider the hexagonal lattice $A_2$ with the following generator matrix:

$$G = \begin{pmatrix} 1 & 0 \\ \frac{1}{2} & \frac{\sqrt{3}}{2} \end{pmatrix}$$

a) Draw the lattice and the Voronoi-Regions around the lattice points.

b) Calculate the volume, the packing efficiency and the covering efficiency.

c) Calculate the normalized coding gain as well as the shaping gain.