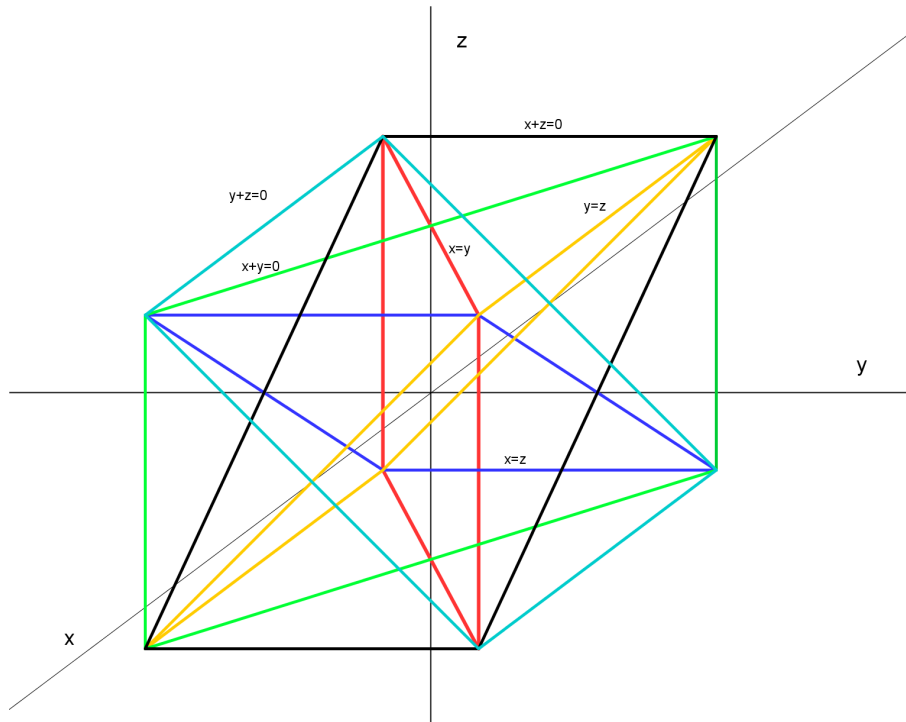


# Short Homework 3

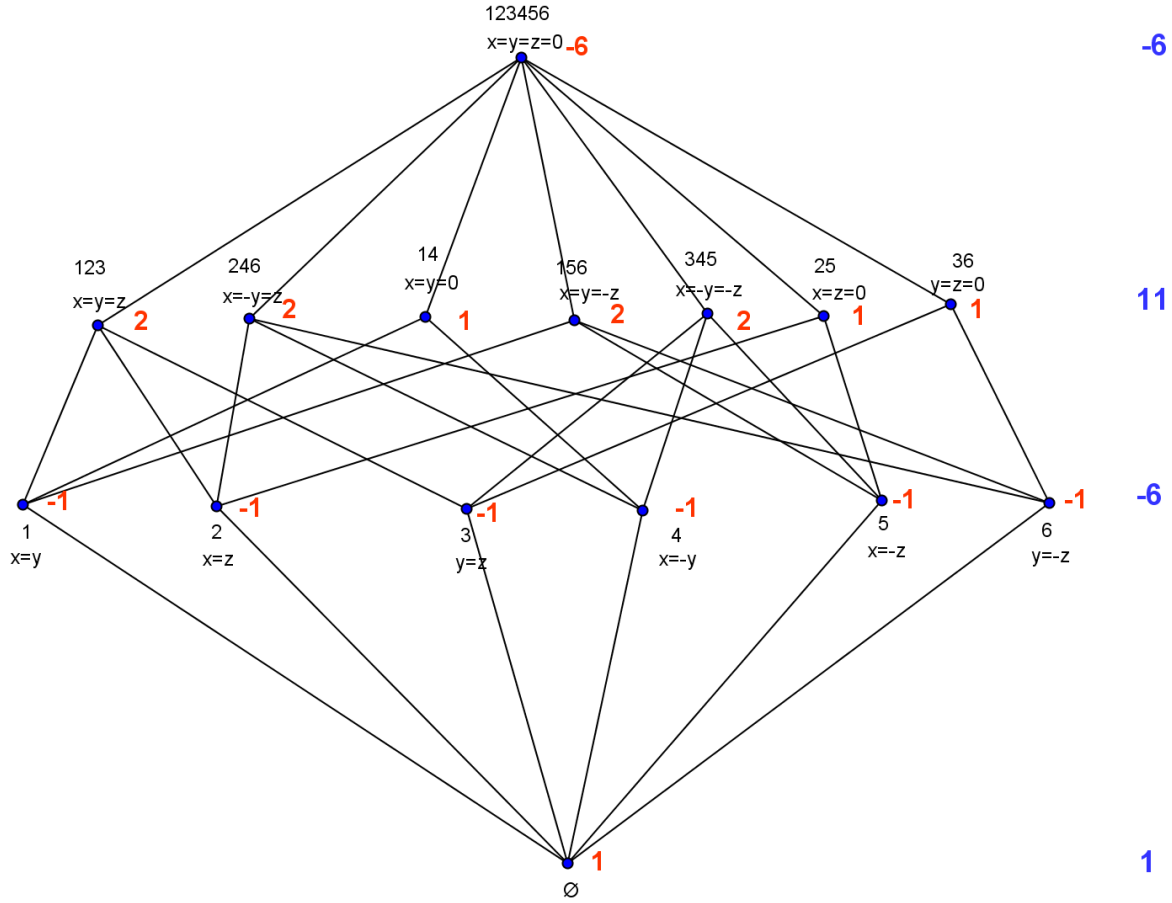
Fabian Prada (Uniandes)

a) The following figure represents the intersection of  $C_3$  with the hyperplane arrangement

$$A = \{x = y, x = z, y = z, x + y = 0, x + z = 0, y + z = 0\}$$



b) The following figure represents the intersection lattice of  $A$ .



c) The value of the Möbius function for each flat corresponds to the red numbers in the previous diagram.

d) From the previous diagram we conclude that the characteristic polynomial of  $A$  is

$$\chi_A(x) = x^3 - 6x^2 + 11x - 6$$

e) From the Zaslavsky's Theorem we can affirm that the number of regions of  $A$  is

$$|\chi_A(-1)| = |-1 - 6 - 11 - 6| = 24$$