TD 3 – LINEAR ALGEBRA

For this exercise, you should use the matrix form for any simultaneous linear systems to solve.

(1) Find a basis for the vector space

$$V_2 = \{(x, y, z) \in \mathbb{Q}^3; \, x + y + z = 0, y + z = 2x\}.$$

(2) Let $\underline{u}_1 = (1, 3, 2, 1)^t$, $\underline{u}_2 = (2, -2, -5, 4)^t$, $\underline{u}_3 = (2, -1, 3, 6)^t$. If $\underline{v} = (2, 5, -4, 0)^t$, write $\underline{v}$ as a linear combination of $\underline{u}_1, \underline{u}_2, \underline{u}_3$. If it is not possible, say no.