

**EXAM FOR “LINEAR ALGEBRA 4” (6LAG4)
SUMMER SEMESTER 2025/2026**

QUESTIONS SET NO. 4

1. Describe the Fano plane: what kind of structure it is, its properties, why it is remarkable.
2. The group of motions of an Euclidean affine space: definition, properties, relation to the orthogonal group.
3.
 - 1) Let a_1, \dots, a_n be points in an affine space. Does the expression $a_1 - a_2 + a_3 - \dots + (-1)^{n+1}a_n$ (alternating signs sum) make sense?
 - 2) Let a_1, a_2, a_3 be points in an affine space. Describe geometrically the set of all barycentric combinations of these points with positive coefficients.