

EXERCISES OF WEEK FOUR

Exercise 1. State whether the two lines ℓ and ℓ' (defined below) intersect. If the intersection is non-empty, then find the intersection points

$$\ell := \ell((-1, 1, 0), (2, 1, 3)), \quad \ell' := \ell((1, 1, 0), (0, 1, 1)).$$

Exercise 2. Write the normal form of the plane containing the two lines ℓ and ℓ' in the first exercise.

Exercise 3. Find the distance between the point $Q(2, 1, 3)$ and the plane given in normal form

$$\pi(P(1, 0, 1), (0, 1, 2)).$$

Exercise 4. Find the intersection between the two planes

$$\pi(P(1, 0, 1), (1, 2, 0)) \cap \pi(P(2, 1, 3), (1, 0, 1)).$$

Exercise 5. Find the distance between the point $P(1, 2, 2)$ and the line ℓ in the first exercise.