

Geometry – Topic list– 2017/2018/II

1. Axioms (I-V)
2. Absolute theorems
3. Hyperbolic parallelism (Hilbert construction)
4. Models of the hyperbolic plane/space, line pencils, cycles, models of the Euclidean plane
5. Stereographic projection, the connection of the Cayley-Klein and the Poincaré disk models
6. Orthogonality in absolute spaces and in the Cayley-Klein model
7. Inversion and cross ratio (inversion of conformity)
8. Distance and angle of the hyperbolic space elements
9. Isometries of the Euclidean plane
10. Isometries of the Euclidean space
11. Area on the Euclidean and hyperbolic plane, spherical area (asymptotic triangle→ pentagon)
12. Spatial vectors and formulas (either Jacobi or Lagrange)
13. Transformations in the Euclidean space, classification
14. Spherical geometry
15. n -dimensional Euclidean space and quadratic forms
16. Conic sections on the Euclidean plane, Dandelin spheres, tangents of conics
17. Convex polyhedrons
18. Cauchy theorem (either spherical arm lemma or sign lemma)
19. Volume in the Euclidean space, Dean invariant
20. Joker