1146-52-249 **Luis Montejano*** (luis@im.unam.mx), Instituto de Matematicas, UNAM, Campus Juriquilla, Boulevard Juriquilla 3001, 76230 Queretaro, Mexico. *On the real geometric hypothesis of Banach.*

The following is known as the geometric hypothesis of Banach: let V be an m-dimensional Banach space with unit ball B and suppose all n-dimensional subspaces of V are isometric (all the n-sections of B are affinely equivalent). In 1932, Banach conjectured that under this hypothesis V is isometric to a Hilbert space (the boundary of B is an ellipsoid). Gromov proved in 1967 that the conjecture is true for n=even and Dvoretzky derived the same conclusion under the hypothesis m=infinity. We prove this for n=5 and 9 and give partial results for an integer n=4k+1. The ingredients of the proof are classical homotopic theory, irreducible representations of the orthogonal group and convex geometry. Suppose B is an (n+1)-dim. convex body with the property that all its n-sections through the origin are affinity equivalent to a fixed n-dimensional body K. Using the characteristic map of the tangent vector bundle to the n-sphere, it is possible to prove that if n=even, then K must be a ball and using homotopical properties of the irreducible subgroups of SO(5) and SO(9), we prove that if n=5,9, then K must be a body of revolution. Finally, we prove that, if this is the case, then there must be a section of B which is an ellipsoid and consequently B must be also an ellipsoid. (Received January 28, 2019)