TOMASZ SZEMBERG, Pedagogical University of Cracow
On Sylvester-Gallai Theorem for conics

The Sylvester-Gallai Theorem asserts that given non-collinear points in the real projective plane, there is a line passing through exactly two of the given points. This has been generalized in the following way for curves of degree two by Wiseman and Wilson: given a finite set of points in the real projective plane either all points are contained in a conic, or there exists a conic passing through exactly five of the given points and this conic is unique (i.e. it is determined by these five points). I will show a new proof of this result using methods from algebraic geometry and I will discuss some further generalizations and present a couple of open problems.