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The direction problem: old and new results

We will consider variants of the direction problem. Let $U \subset AG(n,q)$ be a pointset, then a point d at infinity is *determined* by U if there exist two points $a, b \in U$ such that a, b, d are collinear; the set of determined points (directions) is D. The typical problems ask about the connection between the structure of U and the properties of D. This theory was born in the 1970's and it is still growing; it has many connections to other topics. Here a most efficient method is the application of polynomials, we will see new results and old ones revisited.