1154-52-97 **Alvaro Carbonero** (carboa1@unlv.nevada.edu), **Beth Anne Castellano** (castelle@lafayette.edu), **Charles Kulick*** (charles.kulick@scranton.edu) and **Karie Schmitz** (karie.schmitz@gmail.com). *Exploring Preference Orderings Through Discrete Geometry.* Preliminary report.

Consider $n+1$ points in the plane: a set S consisting of n points along with a distinguished vantage point v. By measuring the distance from v to each of the points in S, we generate a preference ordering of S. The maximum number of orderings possible is given by a fourth-degree polynomial (related to Stirling numbers of the first kind), found by Good and Tideman (1977), while the minimum is given by a linear function. We investigate intermediate numbers of orderings achievable by special configurations S. This work is motivated by a voting theory application, where an ordering corresponds to a preference list. We also consider this problem for points on the sphere, where our results are similar to what we found for the plane. Other variants of the original problem inspired by voting theory are developed. These include using a weighted distance function and also using two vantage points. (Received August 04, 2019)