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Hope K Snyder* (snyderhk@jay.washjeff.edu), **Dorothy Klein, Ryann Cartor, Rachel Carleton** and **Andrew Tonge**. *How Low Can You Go? Estimating the Maximum of a Polynomial.*

Given a homogeneous polynomial of degree k in n variables with leading coefficients a_j , there exists some constant C_k such that the maximum of the polynomial, denoted $\|p\| = \max |p(x_1, x_2, \dots, x_n)|$ when $x_i \in [0, 1]$, can be estimated by $\sum_{j=1}^n |a_j| \leq C_k * \|p\|$. Finding the bound for C_k allows for better estimates of the size of homogeneous polynomials. Estimating the maximum is particularly useful for polynomials that have degree $k > 3$ or number of variables $n > 3$ as finding the maximum for these expressions using calculus becomes increasingly difficult. This is joint work with Ryann Cartor, Rachel Carleton, and Dorothy Klein and Dr. Andrew Tonge completed during the 2013 REU at Kent State University. (Received September 17, 2013)