1116-R1-1300   **Michael Brilleslyper*** (`mike.brilleslyper@usafa.edu`), Department of Mathematical Sciences, USAF Academy, CO 80840, and **Beth Schaubroeck**. *Zeros of Trinomials: Visualization and Location.* Preliminary report.

Modern technology affords the ability to visualize roots of polynomials in the complex plane. The geometry associated with certain sets of roots provides several interesting phenomena and connections to basic number theory. We investigate the 2-parameter family of trinomials given by $p(z) = z^n + z^k - 1$. We explore when this family has zeros on the unit circle and also provide a conjecture for the number of roots inside the unit circle in terms of n and k. In the case $k = 1$, we provide a sketch of the proof, which depends heavily on an application of Rouché's Theorem. This material and associated open problems are suitable for undergraduate research. (Received September 18, 2015)

1