1128-15-326   **Jeffrey L Stuart*** (`jeffrey.stuart@plu.edu`), Department of Mathematics, Pacific Lutheran University, Tacoma, WA 98447. *Sign and ray patterns that allow k-potence.*

The sign (ray) pattern A is said to be sign (ray) k-potent for some positive integer k if $A^{k+1} = A$ as a sign (ray) pattern. We investigate which sign (ray) patterns allow k-potence. That is, if A is a sign pattern such that $A^{k+1} = A$, is there a real matrix B whose sign pattern is A such that $B^{k+1} = B$ as a real matrix. Likewise, if A is a ray pattern such that $A^{k+1} = A$, is there a complex matrix B whose ray pattern is A such that $B^{k+1} = B$ as a complex matrix. We present some new results and some open questions. (Received February 28, 2017)