1145-VQ-2180   **Ivko M Dimitric*** (`ivko@psu.edu`), 2201 University Drive, Lemont Furnace, PA 15456.
Multivariable n-step maps. Preliminary report.

An n-step map is a map f whose nth iterative power is the identity, $f^{\circ n}(x) = x$, hence, such a map is an iterative nth root of the identity map. While there is an extensive literature on n-step maps of one (real) variable, the study of n-step maps of $\mathbb{R}^k$ is not as well developed, outside the framework of matrix theory. We provide some examples of and results on n-step maps of 2 and more variables. In particular, n-step affinely linear maps of $\mathbb{R}^2$ are classified for $n = 2, 3$, and 4. Also, some classification of n-step Cremona transformations of the plane are obtained. (Received September 25, 2018)