

1125-14-2803

Neriman Tokcan* (tokcan2@illinois.edu). *Relative Ranks of Binary Forms.*

Suppose $f(x, y)$ is a binary form of degree d with coefficients in a field $K \subseteq \mathbb{C}$. The K -rank of f , $L_K(f)$, is the smallest number of d -th powers of linear forms over K of which f is a K -linear combination. We prove that for $d \geq 5$, there always exists a form of degree d with at least three different ranks over various fields. We also find lower bounds for \mathbb{C} -rank and \mathbb{R} -rank of binary forms depending on their factorizations. (Received September 20, 2016)