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POLYNOMIAL NUMERICAL HULLS OF ORDER 3[*]

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Dedicated to Professor Chandler Davis for his outstanding contributions to Mathematics

Abstract. In this note, analytic description of $V^3(A)$ is given for normal matrices of the form $A = A_1 \oplus iA_2$ or $A = A_1 \oplus e^{i\frac{2\pi}{3}} A_2 \oplus e^{i\frac{4\pi}{3}} A_3$, where A_1, A_2, A_3 are Hermitian matrices. The new concept "k^{th} roots of a convex set" is used to study the polynomial numerical hulls of order k for normal matrices.

Key words. Polynomial numerical hull, Numerical order, K^{th} roots of a convex set.

AMS subject classifications. 15A60, 15A18, 15A57.