ON THE NUMERICAL RANGES OF THE WEIGHTED SHIFT OPERATORS WITH GEOMETRIC AND HARMONIC WEIGHTS

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Abstract. In this paper, an exact formula for \( \det (I_n - (Q_n + Q_n^*)) \) is obtained. This formula yields a simple computation of the numerical ranges of the geometric weighted shift operator \( Q_n \) and the harmonic weighted shift operator \( H_n \) for \( n = 3, 4 \).

Key words. Numerical range, Weighted shift operators, Geometric weights, Harmonic weights.

AMS subject classifications. 15A60, 47A12.

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