

## INEQUALITIES CONCERNING THE MODULUS OF RATIONAL FUNCTIONS WITH FIXED ZEROS

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**Abstract:** In this paper, we investigate the lower bound and the upper bound of the modulus of rational functions with fixed zeros. Some well-known results are generalized by our results.

**Keywords and Phrases:** Rational functions, Inequalities, zeros.

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### 1. Introduction

Let  $k$  be any positive integer. The results will be presented using the notations listed below:

$$T_k = \{z \in \mathbb{C} : |z| = k\},$$

$$D_k^- = \{z \in \mathbb{C} : |z| < k\},$$

$$D_k^+ = \{z \in \mathbb{C} : |z| > k\}.$$