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Brigham Young University, Provo, UT 84602. *Cauchy and Priority Selection*. Preliminary report.

Let  $P(z) = \sum_{k=0}^n a_k z^k \in \mathbb{C}[z]$  with  $a_0 \neq 0 \neq a_n$ ,  $n > 0$ . A classical theorem of Cauchy provides upper bounds  $r$  and  $s$  on the moduli of zeros of  $P(z)$  and  $z^n P(1/z)$ , respectively. It follows that if  $P(\lambda) = 0$ , then  $1/s \leq |\lambda| \leq r$ . A novel characterization of the reciprocals  $1/s$  and  $1/r$ , by what is called “priority selection,” provides an alternative description of the bounds  $1/s$  and  $r = 1/(1/r)$ . Also, for a given  $P(z)$ , an algorithm is provided that calculates to any prescribed accuracy the numerical values of  $1/s$  and  $1/r$ . (Received August 08, 2006)