Abstract

Let $Q_n(x;\beta,\gamma,c)$ be the polynomials of degree n which satisfy the recurrence relation:

$$a_{n+c}Q_{n+1}(x;\beta,\gamma,c)+a_{n+c-1}Q_{n-1}(x;\beta,\gamma,c)+(\beta_{n+c}+\beta\delta_{n,0})Q_n(x;\beta,\gamma,c)$$

$$=x(1+(\gamma-1)\delta_{n,0})Q_n(x;\beta,\gamma,c),$$

$$Q_{-1}(x;\beta,\gamma,c)=0,\quad Q_0(x;\beta,\gamma,c)=1.$$

In the above, β is real, $\gamma>0$, a_{n+c} and β_{n+c} are real sequences with $a_{n+c}>0$, and $\delta_{n,0}$ is the Kronecker symbol. The co-recursive associated orthogonal polynomials are obtained from the above for $\gamma=1$.

In this paper, the Newton sum rules for the kth power of the zeros of scaled co-recursive associated orthogonal polynomials are determined in terms of the Newton sum rules of associated orthogonal polynomials. Some monotonicity properties of the zeros also are given.