Abstract

Let $x_{nk}^{(\lambda}$), $k = 1, 2, ..., \left[\frac{n}{2}\right]$, be the kth positive zero in decreasing order of the Ultraspherical polynomials $P_n^{(\lambda)}(x)$. It is proved that the largest zero $x_{n1}^{(\lambda)}$ of the polynomials $P_n^{(\lambda)}(x)$ is a convex function of λ for $\lambda \geq \frac{n}{\sqrt{3}} + \frac{1}{2}$, $n \geq 1$.