

Abstract

We study the asymptotic zero distributions of the sequences $\left\{ \frac{d^{\lfloor \alpha n \rfloor}}{dz^{\lfloor \alpha n \rfloor}} (R(z)^n) \right\}$ and $\left\{ \frac{d^n}{dz^n} (R(z)e^{T(z)}) \right\}$, where $R(z)$ is a rational function, $T(z)$ is a polynomial, and $\alpha > 0$ is a real number. Additionally, some numerical results on the above zero distributions are presented along with related conjectures.