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Some Results on the Complex Oscillation Theory of Differential Equations with Polynomial Coefficients

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Abstract: In this paper, we study the possible orders of transcendental solutions of the differential equation $f^{(n)}+a_{n-1}(z)f^{(n-1)}+\cdots+a_1(z)f'+a_0(z)f=0$, where $a_0(z),\ldots,a_{n-1}(z)$ are nonconstant polynomials. We also investigate the possible orders and exponents of convergence of distinct zeros of solutions of non-homogeneous differential equation $f^{(n)}+a_{n-1}(z)f^{(n-1)}+\cdots+a_1(z)f'+a_0(z)f=b(z)$, where $a_0(z),\ldots,a_{n-1}(z)$ and $b(z)$ are nonconstant polynomials. Several examples are given.