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Some Applications of a First order Differential Subordination

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Abstract: Let p and q be analytic functions in the unit disc $E = \{z : |z| < 1\}$, with $p(0) = q(0) = 1$. Assume that α and δ are real numbers such that $0 < \delta \leq 1$, $\alpha + \delta \geq 0$. Let β and γ be complex numbers with $\beta \neq 0$. In the present paper, we investigate the differential subordination

$$(p(z))^\alpha \left[p(z) + \frac{z p'(z)}{\beta p(z) + \gamma} \right]^\delta \prec (q(z))^\alpha \left[q(z) + \frac{z q'(z)}{\beta q(z) + \gamma} \right]^\delta, \quad z \in E,$$

and as applications, find several sufficient conditions for starlikeness and univalence of functions analytic in the unit disc E .

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