APPLICATIONS OF BRIOT–BOUQUET
DIFFERENTIAL SUBORDINATION

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Abstract. Sharp estimates on β in Briot-Bouquet differential subordination

$$p(z) + \beta z p'(z)/p(z) \prec h(z)$$

are obtained so that its solution p is subordinate to some specific Carathéodory functions. As an application, the estimates on β are obtained so that the integral operator $\beta^{-1} \int_0^z f^{1/\beta}(t) t^{-1} dt$ maps the class of starlike functions f satisfying $zf'(z)/f(z) \prec 1 + z$ to various subclasses of class of starlike functions. Further, a sufficient condition is established for parabolic starlikeness.

Mathematics subject classification (2020): 30C45, 30C80.

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