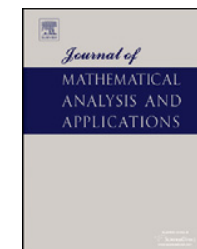




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Starlikeness of integral transforms and duality[☆]

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ABSTRACT

For λ satisfying a certain admissibility criteria, sufficient conditions are obtained that ensure the integral transform

$$V_\lambda(f)(z) := \int_0^1 \lambda(t) \frac{f(tz)}{t} dt$$

maps normalized analytic functions f satisfying

$$\operatorname{Re} e^{i\phi} \left((1 - \alpha + 2\gamma) \frac{f(z)}{z} + (\alpha - 2\gamma) f'(z) + \gamma z f''(z) - \beta \right) > 0$$

into the class of starlike functions. Several interesting examples of λ are considered. Connections with various earlier works are made, and the results obtained not only reduce to those earlier works, but indeed improved certain known results. As a consequence, the smallest value $\beta < 1$ is obtained that ensures a function f satisfying $\operatorname{Re}(f'(z) + \alpha z f''(z) + \gamma z^2 f'''(z)) > \beta$ is starlike.