

NEW CRITERIA FOR MEROMORPHIC P-VALENT CONVEX  
FUNCTIONS

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**Abstract.** Let  $G_n(\alpha)$  be the class of functions of the form  $f(z) = \frac{a_{-p}}{z^p} + \sum_{k=0}^{\infty} a_k z^k$  ( $a_{-p} \neq 0$ ,  $p \in N = \{1, 2, \dots\}$ ) which are regular in the punctured disc  $U^* = \{z : 0 < |z| < 1\}$  and satisfying  $\operatorname{Re} \left\{ \frac{(D^{n+1}f(z))'}{(D^n f(z))'} - (p+1) \right\} < -\alpha$  ( $n \in N_0 = \{0, 1, 2, \dots\}$ ,  $|z| < 1$ ,  $0 \leq \alpha < p$ ), where  $D^n f(z) = \frac{a_{-p}}{z^p} + \sum_{m=1}^{\infty} (p+m)^n a_{m-1} z^{m-1}$ . It is proved that  $G_{n+1}(\alpha) \subset G_n(\alpha)$ . Since  $G_0(\alpha)$  is the class of meromorphically p-valent convex functions of order  $\alpha$ ,  $0 \leq \alpha < p$ , all functions in  $G_n(\alpha)$  are p-valent convex. A property preserving integrals is also considered.

**MSC 2000.** 30C45.

**Key words.** Regular, p-valent, convex, meromorphic.

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Received December 20, 2004

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