

COEFFICIENT ESTIMATES OF NEW CLASSES OF q -STARLIKE AND q -CONVEX FUNCTIONS OF COMPLEX ORDER

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Abstract. We introduce new classes of q -starlike and q -convex functions of complex order involving the q -derivative operator defined in the open unit disc. Furthermore, we find estimates on the coefficients for second and third coefficients of these classes.

Mathematics subject classification (2010): Primary 30C45; Secondary 30C80.

Keywords and phrases: Univalent function, Schwarz function, q -starlike, q -convex, q -derivative operator, subordination, Fekete-Szegő inequality.

REFERENCES

- [1] F. M. AL-BOUDI AND M. M. HAIDAN, *Spirallike functions of complex order*, J. Natur. Geom., **19** (2000) 53–72.
- [2] H. ALDWEBY AND M. DARUS, *A subclass of harmonic univalent functions associated with q -analogue of Dziok-Srivastava operator*, ISRN Math. Anal., Vol. 2013, Art. ID 382312, 1–6.
- [3] H. ALDWEBY AND M. DARUS, *On harmonic meromorphic functions associated with basic hypergeometric functions*, The Scientific World J., Vol. 2013, Art. ID 164287, 1–7.
- [4] G. A. ANASTASSIOU AND S. G. GAL, *Geometric and approximation properties of some singular integrals in the unit disk*, J. Inequal. Appl., Vol. 2006, Art. ID 17231, 1–19.
- [5] G. A. ANASTASSIOU AND S. G. GAL, *Geometric and approximation properties of generalized singular integrals in the unit disk*, J. Korean Math. Soc., **43** (2006), no. 2, 425–443.
- [6] M. K. AOUF, F. M. AL-BOUDI AND M. M. HAIDAN, *On some results for λ -spirallike and λ -Robertson functions of complex order*, Publ. Instit. Math. Belgrade, **77** (2005), no. 91, 93–98.
- [7] A. ARAL, *On the generalized Picard and Gauss Weierstrass singular integrals*, J. Comput. Anal. Appl., **8** (2006), no. 3, 249–261.
- [8] A. ARAL AND V. GUPTA, *On q -Baskakov type operators*, Demonstratio Math., **42** (2009), no. 1, 109–122.
- [9] A. ARAL AND V. GUPTA, *On the Durrmeyer type modification of the q -Baskakov type operators*, Nonlinear Analysis: Theory, Methods & Applications, **72** (2010), no. 3–4, 1171–1180.
- [10] A. ARAL AND V. GUPTA, *Generalized q -Baskakov operators*, Math. Slovaca, **61** (2011), no. 4, 619–634.
- [11] A. ARAL, V. GUPTA, AND R. P. AGARWAL, *Applications of q -Calculus in Operator Theory*, Springer, New York, USA, 2013.
- [12] T. BULBOACĂ, *Differential Subordinations and Superordinations*, Recent Results, House of Scientific Book Publ., Cluj-Napoca, 2005.
- [13] B. A. FRASIN, *Family of analytic functions of complex order*, Acta Math. Acad. Paedagog. Nyházi. (N. S.), **22** (2006), no. 2, 179–191.
- [14] F. H. JACKSON, *On q -definite integrals*, Quarterly J. Pure Appl. Math., **41** (1910) 193–203.
- [15] F. H. JACKSON, *On q -functions and a certain difference operator*, Transactions of the Royal Society of Edinburgh, **46** (1908) 253–281.
- [16] W. C. MA AND D. MINDA, *A unified treatment of some special classes of univalent functions*, in Proceedings of the Conference on Complex Analysis (Tianjin, 1992), 157–169, Internat. Press, Cambridge, MA.

- [17] S. S. MILLER AND P. T. MOCANU, *Differential Subordinations: Theory and Applications*, Series on Monographs and Textbooks in Pure and Applied Mathematics, Vol. **225**, Marcel Dekker, New York and Basel, 2000.
- [18] A. MOHAMMED AND M. DARUS, *A generalized operator involving the q -hypergeometric function*, *Mat. Vesnik*, **65** (2013), no. 4, 454–465.
- [19] M. A. NASR AND M. K. AOUF, *On convex functions of complex order*, *Mansoura Bull. Sci.*, **8** (1982), 565–582.
- [20] M. A. NASR AND M. K. AOUF, *Starlike function of complex order*, *J. Natur. Sci. Math.*, **25** (1985), 1–12.
- [21] V. RAVICHANDRAN, YASAR POLATOGLU, METIN BOLCAL AND ARSU SEN, *Certain subclasses of starlike and convex functions of complex order*, *Hacettepe J. Math. Stat.*, **34** (2005), 9–15.
- [22] M. S. ROBERTSON, *On the theory of univalent functions*, *Ann. Math.*, **37** (1936), 374–408.
- [23] P. WIATROWSKI, *On the coefficients of some family of holomorphic functions*, *Zeszyty Nauk. Uniw. Łódź, Nauk. Mat.-Przyr.*, **39** (1970), 75–85.