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NEW INTEGRAL INEQUALITIES PERTAINING CONVEX FUNCTIONS AND THEIR APPLICATIONS

Artion Kashuri [1, ✉]

e-mail: artionkashuri@gmail.com

Abstract: In this paper, first we prove a new generalized midpoint identity. By applying this identity some interesting midpoint type integral inequalities via s--convex functions are given. Some special cases obtained from our main results are discussed in details. Finally, some applications on the Bessel functions, special means of distinct positive real numbers and error estimation about midpoint quadrature formula are presented to support our theoretical results.

Key words and phrases: Hölder's inequality, power mean inequality, s--convex functions, Bessel functions, special means, midpoint formula.

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[1, ✉] University "Ismail Qemali", Faculty of Technical Science, Department of Mathematics, 9400, Vlora, Albania.

✉ Corresponding author

References:

[1] M. Alomari, M. Darus, U. S. Kirmaci, *Refinements of Hadamard-type inequalities for quasi--convex functions with applications to trapezoidal formula and to special means*, Comput. Math. Appl., 59 (2010), 225–232. MR2575509

[2] M. Alomari, M. Darus, U. S. Kirmaci, *Some inequalities of Hermite--Hadamard type for s--convex functions*, Acta Math. Sci., Ser. B, Engl. Ed., 31B(4) (2011), 1643–1652. MR2856475

[3] F. X. Chen, S. H. Wu, *Several complementary inequalities to inequalities of Hermite--Hadamard type for s--convex functions*, J. Nonlinear Sci. Appl., 9(2) (2016), 705–716. MR3416283

[4] S. S. Dragomir, S. Fitzpatrik, *The Hadamard's inequality for s-convex functions in the second sense*, Demonstratio Math., 32(4) (1999), 687–696.

[5] N. Eftekhari, *Some remarks on (s,m)--convexity in the second sense*, J. Math. Inequal., 8 (2014), 489–495. MR3260321

[6] H. Hudzik, L. Maligranda, *Some remarks on s--convex function*s, Aequationes Math., 48 (1994), 100–111. MR1277893

[7] M. Kadakal, İ. İşcan, Exponential type convexity and some related inequalities, J. Inequal. Appl., 2020(1) (2020), 1–9. MR4080524

[8] A. Kashuri, R. Liko, *Some new Hermite-Hadamard type inequalities and their applications*, Stud. Sci. Math. Hung., 56(1) (2019), 103–142. MR3945458

[9] M. A. Khan, Y. M. Chu, T. U. Khan, J. Khan, *Some new inequalities of Hermite-Hadamard type for s--convex functions with applications*, Open Math., 15 (2017), 1414–1430. MR3737816

[10] M. Muddassar, M. I. Bhatti, M. Iqbal, *Some new s--Hermite–Hadamard type inequalities for differentiable functions and their applications*, Proc. Pak. Acad. Sci., 49(1) (2012), 9–17. MR3023098

[11] S. Özcan, İ. İşcan, *Some new Hermite-Hadamard type inequalities for s--convex functions and their applications*, J. Inequal. Appl., 2019(201) (2019), 1–11. MR3984120

[12] O. Omotoyinbo, A. Mogbodemu, *Some new Hermite--Hadamard integral inequalities for convex functions*, Int. J. Sci. Innovation Tech., 1(1) (2014), 1–12.

[13] S. Rashid, M. A. Noor, K. I. Noor, A. O. Akdemir, *Some New Generalizations for Exponentially s--Convex Functions and Inequalities via Fractional Operators*, Fractal and Fract., 3(24) (2019), 1–16.

[14] M. Z. Sarikaya, H. Yildirim, *On Hermite-Hadamard type inequalities for Riemann--Liouville fractional integrals*, Miskolc Math. Notes, 17(2) (2017), 1049–1059. MR3626938

[15] E. Set, M. A. Noor, M. U. Awan, A. Gözpinar, *Generalized Hermite-Hadamard type inequalities involving fractional integral operators*, J. Inequal. Appl., 169 (2017), 1–10. MR3673730

[16] Y. Shuang, H. P. Yin, F. Qi, *Hermite--Hadamard type integral inequalities for geometric-arithmetically s--convex functions*, Analysis, 33 (2013), 197–208. MR3082282

[17] B. Y. Xi, F. Qi, *Some integral inequalities of Hermite--Hadamard type for convex functions with applications to means*, J. Funct. Spaces Appl., 2012 (2012), Article ID 980438, pp. 14. MR2957156

[18] X. M. Zhang, Y.-M. Chu, X. H. Zhang, *The Hermite-Hadamard type inequality of GA--convex functions and its applications*, J. Inequal. Appl., (2010), Art. ID 507560, pp. 11. MR2600199

[19] G. N. Watson, *A treatise on the theory of Bessel functions*, Cambridge Mathematical Library, Cambridge University Press, Cambridge, 1995. Reprint of the second (1944) edition.