APPLICATIONS OF THE HERMITE–HADAMARD INEQUALITY

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Abstract. We show how the recent improvement of the Hermite-Hadamard inequality can be applied to some (not necessarily convex) planar figures and three-dimensional bodies satisfying some kind of regularity.

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REFERENCES

[1] M. BESSENYEI, The Hermite-Hadamard Inequality on Simplices, Amer. Math. Monthly 115, 4 (2008), 339–345.
[2] Y. CHEN, Multi-dimensional Hadamard’s inequalities, Tamkang J. Math. 43, 1 (2012), 1–10.
[3] S. S. DRAGOMIR AND C. E. M. PEARCE, Selected topics on Hermite-Hadamard inequalities and applications, RGMIA Monographs, Victoria University, Melbourne (2000), http://ajmaa.org/RGMIA/monographs.php.
[4] J. HADAMARD, Étude sur les propriétés des fonctions entières et en particulier d’une fonction considérée par Riemann, J. Math. Pures Appl. 58, (1893), 171–215.
[5] P. C. HAMMER, The midpoint method of numerical integration, Math. Mag. 31, (1958), 193–195.
[6] E. NEUMAN, Inequalities involving multivariate convex functions II, Proc. Amer. Math. Soc. 109, 4 (1990), 965–974.
[7] M. NOWICKA AND A. WITKOWSKI, A refinement of the left-hand side of Hermite-Hadamard inequality for simplices, J. Inequal. Appl. (2015) 2015:373, DOI 10.1186/s13660-015-0904-0
[8] M. NOWICKA AND A. WITKOWSKI, A refinement of the right-hand side of the Hermite-Hadamard inequality for simplices, Aequationes Math. (2016) DOI: 10.1007/s00010-016-0433-z
[9] J. PEČARIĆ, F. PROSCHAN AND Y. L. TONG, Convex Functions, Partial Orderings, and Statistical Applications, Academic Press, Inc., 1992.
[10] S. WĄSOWICZ AND A. WITKOWSKI, On some inequality of Hermite-Hadamard type, Opuscula Math. 32, 3 (2012), 591–600.