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Summary: We establish some new Ostrowski-Grüss type integral inequalities involving \((k-1)\) interior points in 1D case, which are generalizations of some known results in the literature, and one of which is sharp. Then we deduce an Ostrowski-Grüss type integral inequality in 2D case involving \((k-1)^2\) interior points for the first time. We also present one application on the estimate of error bound for numerical integration formula, in which a sharp error bound for a new numerical integration formula is provided by the results established.

MSC:
26D15 Inequalities for sums, series and integrals
65D30 Numerical integration

Keywords:
Ostrowski-Grüss type inequality; numerical integration; error bound; sharp bound

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References:
[1] Ostrowski, A., Über die absolutabweichung einer differentierbaren funktion von ihren integralmittelwert, Comment. math. helv., 10, 226-227, (1938) · Zbl 64.0209.01

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