

GENERAL FOUR-POINT QUADRATURE FORMULAE WITH APPLICATIONS FOR α -L-HÖLDER TYPE FUNCTIONS

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ABSTRACT. Let $w : [a, b] \rightarrow [0, \infty)$ be some probability density function and $f : I \rightarrow \mathbb{R}$, where $[a, b] \subset I \subset \mathbb{R}$, such that for some $n \geq 2$ the derivative $f^{(n-1)}$ is absolutely continuous on I . For an arbitrary $x \in (a, (a+b)/2]$ we consider a couple of general four-point weighted quadrature formulae of the type

$$\begin{aligned} & \int_a^b w(t) f(t) dt \\ &= \left(\frac{1}{2} - A(x) \right) [f(a) + f(b)] + A(x) [f(x) + f(a+b-x)] + R(f, w; x), \end{aligned}$$

based on two new extensions of the weighted Montgomery identity recently proved by A. Aglič Aljinović and J. Pečarić. We prove a number of related Ostrowski type inequalities which enables us to establish some error estimates for these quadrature formulae when they include α -L-Hölder functions.