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## "Non-strict" l'Hospital-Type Rules for Monotonicity: Intervals of Constancy

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**Abstract:**

Assuming that a "derivative" ratio  $\rho := f'/g'$  of the ratio  $\tau := f/g$  of differentiable functions  $f$  and  $g$  is strictly monotonic (that is,  $\rho$  is increasing or decreasing), it was shown in previous papers that then  $\tau$  can switch at most once, from decrease to increase or vice versa. In the present paper, it is shown that, if  $\rho$  is non-strictly monotonic (that is, non-increasing or non-decreasing), then  $\tau$  can have at most one maximal interval of constancy (m.i.c.); on the other hand, any one m.i.c. of a given derivative ratio  $\rho$  is the m.i.c. of an appropriately constructed original ratio  $\tau$ .



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