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Higher order convexity and iterated convolution

We discuss recent progress on how the additive structure of a set of real numbers is perturbed by functions with non-vanishing derivatives. In particular, if a set A has sufficient additive structure and f is a sufficiently convex function, then there are relatively few solutions to $f(a_1) + ... + f(a_k) = f(a'_1) + ... + f(a'_k)$ for appropriate ranges of k. This is joint work with P. Bradshaw and M. Rudnev.