The hidden geometry of the "hyper convex" functions

The sign of the first and second derivative of a function gives us important information about the geometry of the graph of the function. Ever wondered if the third or other higher order derivatives carry any information about the function? To demonstrate the affirmative answer we will solve the following problem. Let n and k be fixed numbers. Given any k points on the plane (with different x-coordinates) can we always find a function f(x) so that f(x) is going through the given points and its n-th derivative is a non-negative function? .