Find all sequences $a_0, a_1, \ldots, a_n$ of real numbers where $n \geq 1$ and $a_n \neq 0$, for which the following statement is true:
If $f : \mathbb{R} \to \mathbb{R}$ is an n times differentiable function and $x_0 < x_1 < \cdots < x_n$ are real numbers such that $f(x_0) = f(x_1) = \cdots = f(x_n) = 0$ then there exists an $h \in (x_0, x_1)$ for which

$$a_0 f(h) + a_1 f'(h) + \cdots + a_n f^{(n)}(h) = 0.$$