

There is given a prime number p and two positive integers, k and n . Determine the smallest nonnegative integer d for which there exists a polynomial $f(x_1, \dots, x_n)$ on n variables, with degree d and having integer coefficients that satisfies the following property: for arbitrary $a_1, \dots, a_n \in \{0, 1\}$, p divides $f(a_1, \dots, a_n)$ if and only if p^k divides $a_1 + \dots + a_n$.