# University of Colorado
# Department of Mathematics
# Problem of the Month
# December 2016

Define a sequence of positive integers as follows: $a_0 = 1$, and $a_{n+1}$ is the least prime number strictly larger than $a_0 + a_1 + \cdots + a_n$. The sequence starts out

$$(a_0, a_1, a_2, \ldots) = (1, 2, 5, 11, 23, \ldots).$$

Show that the polynomial $a_0 x^n + a_1 x^{n-1} + \cdots + a_{n-1} x + a_n$ is irreducible over $\mathbb{Q}$.