Difficulty: 3/4 Interest: 4/4

Consider the fuction A300002(n) which is the lexicographically earliest sequence of positive integers such that no $k+2$ points are on a polynomial of degree k. (i.e. no two points are equal, no three points are colinear, no four points are on a parabola, etc.)

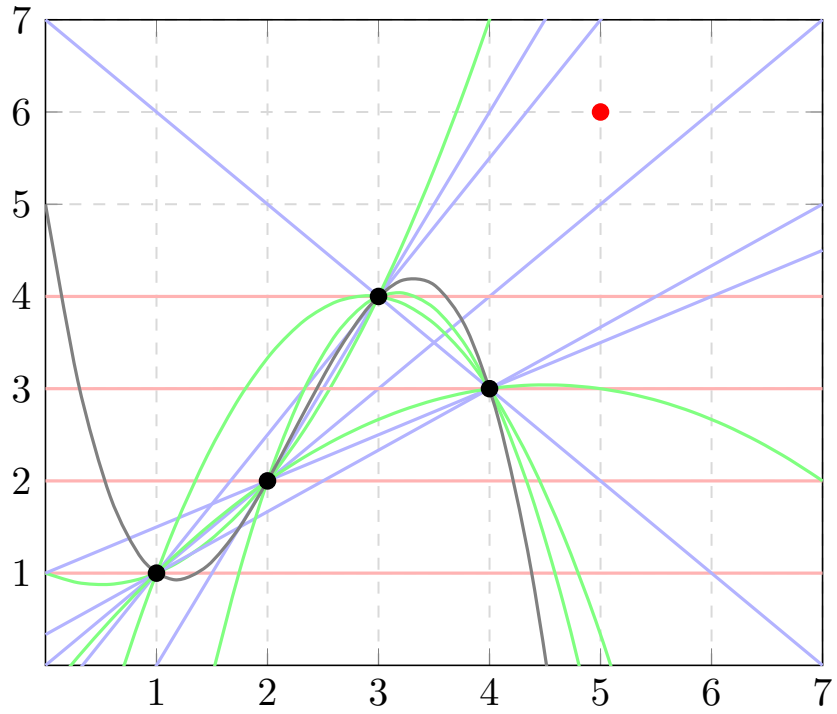

Figure 1: The first four points together with all interpolated polynomials. The red point marks the lowest integer coordinate $(5, k)$ that does not lie on an interpolated polynomial. (Degree 0 polynomials are plotted in red, degree 1 in blue, degree 2 in green and degree 3 in gray.)

Question. Do all positive integers occur in this sequence?

Related.

1. What is the asymptotic growth of this sequence?

References.

`https://oeis.org/A300002`