

Re: ranges of integer polynomials

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On Oct 7, 9:16 am, quasi <qu...@xxxxxxxxx> wrote:

In dealing with density questions, we may or may not care whether the set is recursively recoverable from the range.

Let N be an abbreviation for $N_1^2 + N_2^2 + N_3^2 + N_4^2$, and let P be a Matijasevic polynomial for some set E of positive integers.

Let $Q = (N+1)(1 + (N+3)P^2)$. Then the range of Q is E union T , where T is a set of density 0. We can arrange for E to have any (constructible) desired density d , which will then also be the density of the range of Q .

It looks as if for "general" questions, positive polynomials are not much better behaved than polynomials. However, the many questions of number-theoretic character that you raised still remain interesting, and mostly probably difficult. With Diophantine sets, there is an easy trick to implement "or" in a generic way. However, for ranges there is no such generic trick.

I will check your "range need not be recursive" argument. It certainly looks reasonable. And I will try to reply in the right place!

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