

Re: Guess the Permutation

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I am posting the solution below.

It would be interesting if Jyrki Lahtonen's hypotheses (especially that involving $\sqrt{3}$) turned out to be correct.

Leroy Quet wrote:

- > *Here are the first terms of a sequence which*
- > *forms a permutation of the positive integers.*
- >
- > *1,2,3,6,4,9,5,12,7,16,8,19,10,23,11,26,*
- > *13,30,14,33,15,36,17,...*
- >
- > *Try to guess the rule I used to generate this permutation.*
- > *(Not in EIS.)*
- >
- > *I know there are an infinite number of rules*
- > *which generate permutations which start with*
- > *the same terms as above.*
- > *But try to guess the rule anyway.*
- >
- > *I will give the answer in a few days if no one else gives it sooner.*
- > *thanks,*
- > *Leroy Quet*

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$a(2n-1)$ = the lowest positive integer not occurring earlier in the sequence.

$a(2n)$ = the $a(2n-1)$ th lowest positive integer not occurring earlier in the sequence.

So, for example, the positive integers not among the first 5 terms form the sequence

$\{b_5(k)\}: 5, 7, 8, 9, 10, 11, \dots$

$a(5)$ is 4; so the 4th term of $\{b_5(k)\}$ is 9, which is $a(6)$.

thanks,

Leroy Quet