

Collatz Conjecture

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1 Conjecture 1

If you take x , some number, and double x , so x^2 it will take it one more term to reach 1. Example: Take x to be 100, it takes 26 terms to reach 1. So x^2 would be 200 and it takes 200, 27 terms to reach 1.

2 Conjecture 2

If you start with 2^n it will take $n+1$ terms to reach 1. Example: If you start with $n=1$ 2^1 would be 2 and it takes 2 terms to reach 1. And if you take $n=2$ it would take 3 terms to reach 1.

3 Conjecture 3 and proof

If you start with the equation $a \cdot 2^n = x$ If we start with know a and know what x if knowing a , we know that every time that you increase n by 1 x also goes up by 1. This is true because if you say that your $a=100$ and you know that 100 takes 26 terms to reach one. Take $a=100$ then $x=26$. So now you know a bunch of patterns that are infinitely long and there are infinitely many of them.