326. Power Of Three

Given an integer n, return True if it is a pow of three. Otherwise, return False

An integer n is a power of three, if there exists an integer x such that $n == 3^x$

Constraints: • $-2^{31} <= n <= 2^{31} - 1$

My first instinct is to simply create a range from 0 to a number that is the ~~square~~ root of this other number and multiply it by 3 until I have found a number that has gone both below and over it. One thing I could do is to create that range dinamically, as my range has to be much smaller than my n, I shouldn't need as much numbers to know if it is True or False. What if I simply divided the number twice by three? I would just need to exponentiate it again to see if it is correct.

	[0]	[1]	[2]
n = 27	9	3	1

I could divide until my number is equal to one or less, and then multiply 1 to 3 to the number of times I divided it. My code works on most cases, but there is a thing that I don't understand: why -1 is outputed as False while 1 is outputed as True; if I had $(-1)^3$ I would get -1. By asking the A.I. it seems that when we use the term "power" we are only referring to the positive numbers so anything from 0 to the left can be safely ignored. He also talked about using the modulo operator until and check if the remainder is 1... which I can't quite understand either. An algorithm base 10 can be used to solve this problem without the need of a loop but I haven't quite understood it, so I will check some videos to see what I learn.

1. Input 0 or more
2. Output at least 1 output
3. Definiteness Clear meaning
4. Finiteness Must terminate at some point
5. Effectiveness

$n = 3^x \quad \ln(n) = \ln(3^x)$

$\ln(n) = x \ln(3)$

$x = \frac{\ln(n)}{\ln(3)}$

$\log A^N = N \log(A)$

$\log(A \cdot B) = \log A + \log B$

$\log\left(\frac{A}{B}\right) = \log A - \log B$