

BACCALAUREAT-DNL Mathématiques/Anglais - Session 2018

Watch the video <https://www.youtube.com/watch?v=4aMtJ-V26Z4>

1. Explain to the jury why 153 is a narcissistic number.
2. Give a four digit narcissistic number.
3. Explain why every one digit number is a narcissistic number.
4. According to the mathematician, is there an infinite list of narcissistic numbers?
5. Looking for a two digit narcissistic number n :
 - a) Why is there no narcissistic two digit number with 0 for units digit.

Let's call t the tens digit and u the units digit of :

- b) Express n in terms of t and u .
- c) Prove that n is a narcissistic number, if and only if t is a solution of the equation :

$$(E): x^2 - 10x + (u^2 - u) = 0$$

- d) Prove that there is no two digit narcissistic number. You may use the board below:

Value of u	Discriminant of (E)
0	100
1	100
2	92
3	76
4	52
5	20
6	-20
7	-68
8	-124
9	-188

6. Give a method to prove that 153 is the smallest 3 digit narcissistic number.