

Names

Chaos and Fractals

College of the Atlantic.

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Please form group of three or four. Groups of five are definitely too large.

1. Say hello to other people in your group.
2. Share a story about your name. First name, middle name, family name, chosen name, nickname, whatever. Why were you give (or did you choose) that name, what do you like or dislike about it, what does it say about you (or not), etc.
3. Await further instructions.

A Quest for Palindromes: Iterating the Reverse-and-Add Function

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We're going to explore the Reverse-and-Add function. What this function does is as follows. The input is a number x . Take this number and reverse its digits, then add the reversed number to the original number. In class yesterday, we called this reverse function β . For example

$$\beta(13) = 31 . \quad (1)$$

Let's call the Reverse-and-Add function R . Then,

$$R(x) = x + \beta(x) . \quad (2)$$

This probably makes more sense with an example:

$$R(13) = 13 + 31 = 44 . \quad (3)$$

Hey! That's a palindrome. Seems like this R function might be a good way to make palindromes. To that end, let's refine our definition of R . If the input of R is already a palindrome, then R leaves the input unchanged. But if R isn't a palindrome, then Eq. (2) is used. In other words:

$$R(x) = \begin{cases} x & \text{if } x \text{ is a palindrome} \\ x + \beta(x) & \text{if } x \text{ is not a palindrome} \end{cases} \quad (4)$$

Here is your mission:

- Explore the behavior of R . Try different inputs¹ and see what happens.
- What patterns do you see? How might you represent or visualize or conceptualize those patterns?
- Record your results on a large piece of paper.

¹The input should always be an integer that has at least two digits.