Why Is There No Difference In Our Ages?

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Suppose your age is x_t and my age is y_t at some time t. Then in n years your age is $x_t + n$ and my age is $y_t + n$. What this implies is that as time goes by (measured by n), the difference in our ages vanishes!

Why? Consider that

$$\lim_{n\to\infty} \left[\frac{x_t + n}{y_t + n} \right] = 1$$

which is another way of saying the same thing. This result is reassuring since it pretty much models our experience.

More generally, consider the function $f_a(n) = a + n$ where $a, n \in \mathbb{N}$. Then

$$\lim_{n\to\infty} \left[\frac{f_a(n)}{f_b(n)} \right] = 1 \tag{1}$$

for $a, b \in \mathbb{N}$. We also write Equation 1 in the following alternate notation:

$$f_a(n) \sim f_b(n)$$

That is, the $\sim$ symbol means that the ratio of its two arguments tends towards 1 as its arguments tend toward ∞.