

Test
vectors

$$n := [1..10000]$$

$$A_n := \frac{(-1)^{n+1}}{n}$$

$$v := \begin{bmatrix} e & \pi \\ \sqrt{2} & i \end{bmatrix}$$

$$B_n := \text{eval} \left(\frac{\text{random}(10^9)}{10^9} \right)$$

Symbolic Evaluation

Timing

Numeric evaluation

Original
sum

$$\sum v = \frac{500000000000000 \cdot i + 363704402221097}{500000000000000}$$

$$\sum v = 7.2741 + i$$

$$to := \text{time}(0) \quad \ln(2) - \left(\sum A \right) = 4.9997 \cdot 10^{-5} \quad \text{time}(0) - to = 0.216 \text{ s}$$

$$to := \text{time}(0) \quad \sum B = 4910.2341 \quad \text{time}(0) - to = 0.547 \text{ s}$$

Well defined
sum

$$\sum x := \left| x_{[1..length(x)]} \cdot (1 + \text{matrix}(length(x), 1)) \right|$$

$$\sum v = e + \pi + \sqrt{2} + i$$

$$\sum v = 7.2741 + i$$

$$to := \text{time}(0) \quad \ln(2) - \left(\sum A \right) = 4.9997 \cdot 10^{-5} \quad \text{time}(0) - to = 0.453 \text{ s}$$

$$to := \text{time}(0) \quad \sum B = 4910.2341 \quad \boxed{\text{time}(0) - to = 0.459 \text{ s}}$$

Bad defined
sum

$$\sum x := \left| \text{eval} \left(x_{[1..length(x)]} \cdot (1 + \text{matrix}(length(x), 1)) \right) \right|$$

$$\sum v = \frac{500000000000000 \cdot i + 363704402221097}{500000000000000}$$

$$\sum v = 7.2741 + i$$

$$to := \text{time}(0) \quad \ln(2) - \left(\sum A \right) = 4.9997 \cdot 10^{-5} \quad \text{time}(0) - to = 0.404 \text{ s}$$

$$to := \text{time}(0) \quad \sum B = 4910.2341 \quad \text{time}(0) - to = 0.526 \text{ s}$$

My
Conclusions

1. I expect the result painted in red as the value for sum(v)
2. Eval not always reduce the time, like the time marked with border
3. SMath sum have an unnecessary eval: it's result is the same as the bad defined sum.

Alvaro