

# Who can compute?

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## Contents of this talk

SymPy is a Computeralgebra system usable in Python. Mathematica is another (mighty) Computeralgebra system. It is free for the Raspberry Pi. ChatGPT is a popular AI system. We want to compare the capabilities of these three systems regarding some nontrivial mathematical tasks. Who will be the winner of this contest?

## Selected exercises

- Solve for  $x$ :  $x + 2^x = 5$
- Solve for  $a, b, c$ :  $ab = 100, bc = 200, ca = 300$
- Compute the solutions  $(x, y, z) \in \mathbb{C}^3$  for  $x^2 + y^2 + z^2 - 1 = 0$  and  $x^2 - y + z^2 = 0$  and  $x - z = 0$
- Prove, that  $7^n + 3^n - 2$  is divisible by 4 for all  $n \in \mathbb{N}_0$

## Sources

- <https://hashdork.com/sympy-library-guide/>
- <https://www.wolfram.com/language/fast-introduction-for-math-students/en/>