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CART 498

Assignment 3 - GPT 4.1, Worst Mathematician Ever

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The first failure of the bot happened when the number got too big to calculate. On the sixth and seventh iteration, the number is incorrectly multiplied by the fifth iteration number instead of itself. I'm guessing it somehow forgot the pattern of operation and just made a new one.

The second error sees that the AI simply gave up on the problem. It didn't want to iterate ten times, so it stopped at three and made up an answer. In its explanation for its own failure, it seems it just decided to make  $2^{10}$  the final answer instead of doing the calculation. This misinterpretation only seems to happen with certain combinations of numbers as well. Higher number of iterations makes the AI freak out because of how many steps it has to do. It's almost like it is its own broken telephone. Given my understanding of tokenization and prediction, it would make sense that that's how it's operating.

For the third error, it's a similar situation to the second, but with a twist in its logic. So it makes the similar calculations errors as before but then declares itself correct. I had programmed it to announce that it made a 'lucky guess' if it was correct. It did so and even declared that I had provided a miscalculated answer. However, it also immediately said that it was wrong right after. There seems to be a break in the AI's understanding of the rules provided.

I do think there were some other things that could've caused errors. Since the answer is in the prompt, I wonder if that had any influence on how the machine operated.. I had also raised the temperature a tiny bit to make the dialogue less redundant. But that may have also contributed to worsening the AI's math skills. What was clear was that big numbers made it not work well. Otherwise it could give the answers correctly.