

For this lab, we were to observe the differences in the approximations of trigonometric functions and the math library. For my own code, the differences between my approximations of sin and cos and the math library was quite large in the beginning of the table, and less near the middle. The graph below displays this difference.

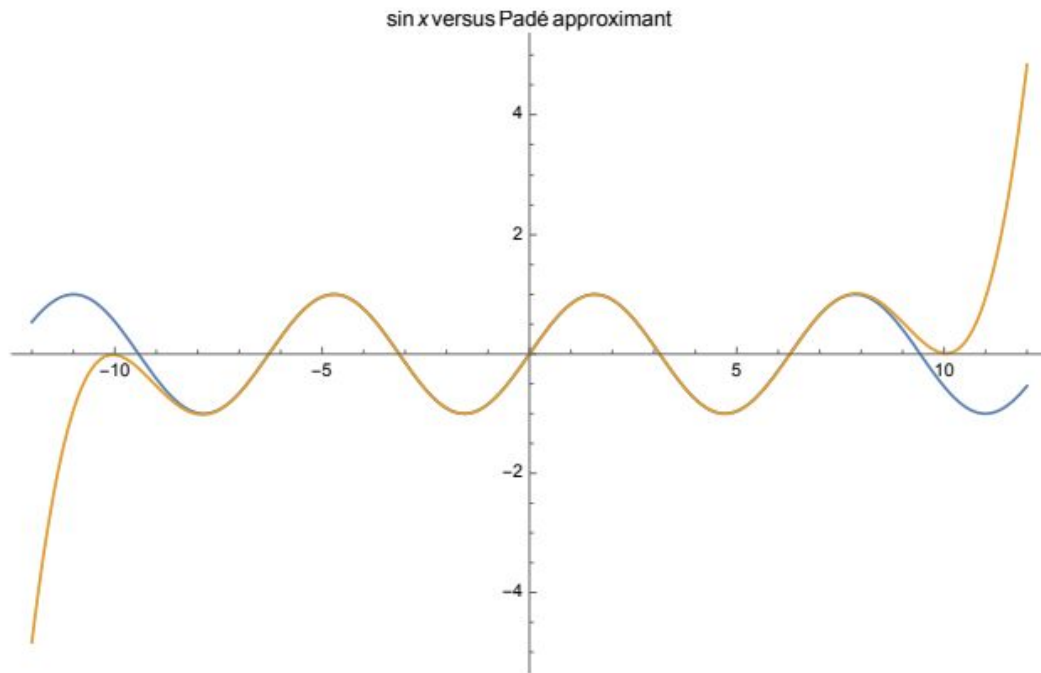


Figure 3: Comparing $\sin(x)$ with an order 10 Padé approximant.

Here we see that at the ends of the approximate, it becomes largely different than the actual graph of sin. This is similar to what the cos graph would look like. This is largely due to the fact that the bigger order for the approximant, the closer to the actual answer you get. Because I used what was given, which was a 14 order padé approximant, it isn't as accurate as it can be. If I wanted to be more accurate, I would have used a Taylor series to approximate the function, which would keep approximating until it is satisfied.

Exponential, however, is pretty accurate compared to the math library. This is because I used the Taylor series approximation, which is much more accurate because it can go infinitely, which means it can be more and more accurate to the actual answer.