Extrapolation: Extending our reach, to the unreachable (30 Points)

Now it is time to put the first two parts together! Using different estimation methods, do the following:

How will the distribution of overlapping area of two random convex hull (one of N points, and another of M points) be for large N,M? also plot the result for (M=N) as a single variable function.

How will the expected area of an N-gon in a (circle, triangle, square) of unit size, behave for large N?

Epilogue

In reality, in many fields of science and also practical situation, we have large Ns popping up, and we have problems we can’t tackle with brute force. Take N, to be the number of users of facebook for example. The methods to find asymptotic behavior of systems (equations per se) for extreme cases are (mostly) the legacy of physicist, because long before facebook (!) people had to deal with even more extreme numbers in the field of thermodynamics. A mol of gas is made up of 10^(23) particles and that is HUGE, so they came up with ways to calculate wanted parameters, and equations, for large N. (One of the methods, is what we did here, extrapolation.)

The goal of this project has been to familiarize you with “Probability and Statistics” in action. This has been a very specific tiny point, of where we need the methods and content you learned (/will learn) through these course. The methods, and the tools of probability and statistics, are widespread and are a requirement in almost any field.