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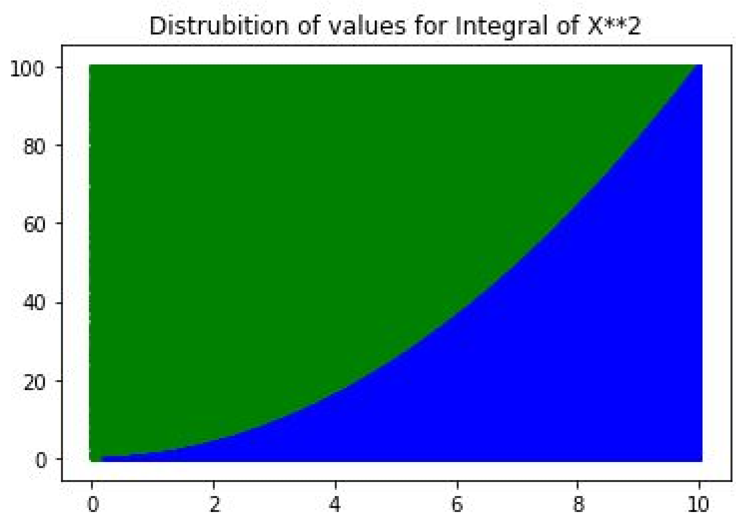
Computational
Exercise 13

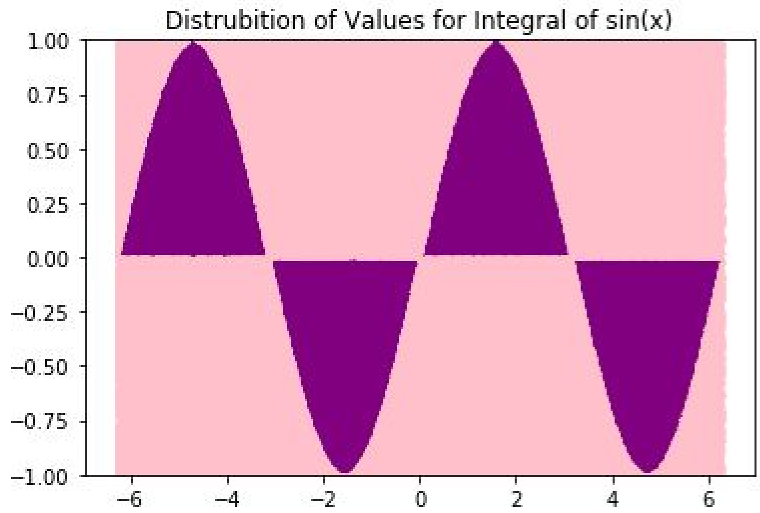
With 100,000 iterations, my function was able to get around a reasonable answer for
for the integral of x**2 from 0 to 10. Even better result occurred with 1 million iterations.
This is a reasonable value for the fact that it is calculated from randomly generated numbers.
But it is interesting that you can use the distribution function to determine the integral of a
function. Based on the fact that we have a correlation to area.

The code results are below:
The estimated value for (x**2) is: 333.47900000000004

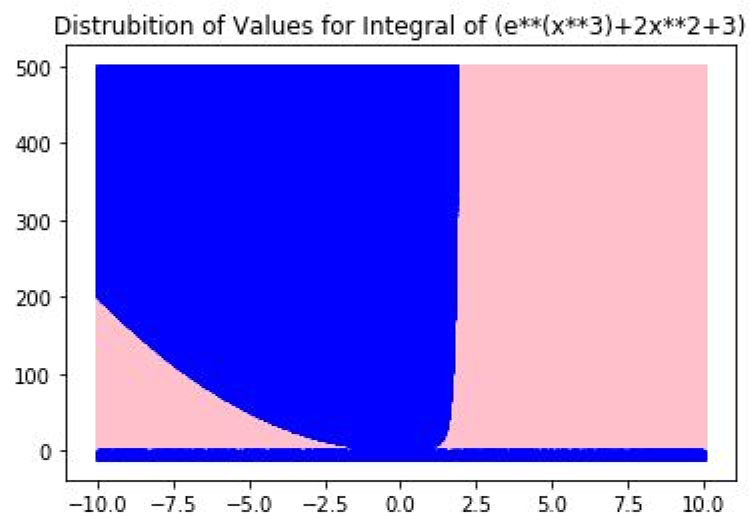


Here when looking at the calculated value from my function compared to the analytical value,
my result is smaller by a couple orders of magnitude. It is close,but not quite there. I do not
believe the function will be able to accurately calculate the integral of sin(x) from 0 to 10.
With one million iterations already, I do not know how feasible this method would be to precisely
calculate the value. It is a good estimation though. But, the variation of the results for several
runs, creates too much uncertainty. Some of the results are outside of perhaps two standard
deviations.

The estimated value for sin(x) is: -1.4988940588816736e-05



The estimated value of (e**(x**3)+ 2x**2 + 3) is: 262103524.20704842



When using the accepted points as a weighted random sample for a probability distribution, like a gaussian, it would allow you to randomly select values that would lie within the correct area under the curve.