1 Conclusion

It seems for the quadrature methods that a higher number of integration points N - beyond whats discussed in the results($N > 11$) - does not yield better results. Comparing Legandre with Laguerre there is a significant improvement in precision, not least when it comes to stability when increasing N.

Monte Carlo, on the other hand, is way less stable and the results can be unpredictable - at least for our implementation. However, compared to the quadrature methods, Monte Carlo is preferred when it comes to multi-dimensional integrals like the one solved here. This is due to the computational power needed and the complexity of the calculations, which are simplified/reduced drastically by utilizing non-deterministic integration.

Parallelization and other methods of optimizing had a big impact on the speed of the calculation. However, for this relatively simple integral, the time spent is not exactly impressive.