May 17th – Tried to implement a finite difference scheme for Vlasov equation using centered differences. Since they are first order derivates, the resulting matrices will be skew-symmetric (imaginary eigenvalues). I first used Forward Euler, but the stability region does not intersect the imaginary axis. Must find a method that does!!

Try and Adams-Bashforth method: [https://en.wikipedia.org/wiki/Linear\_multistep\_method#Adams.E2.80.93Bashforth\_methods](https://en.wikipedia.org/wiki/Linear_multistep_method" \l "Adams.E2.80.93Bashforth_methods)

The third order Adams-Bashforth method should include part of the imaginary axis.

Also need to use electric field somehow...Poisson equation.

In 1d 1v, the poisson equation is just a 1d BVP… have already used scipy.integrate.simps to obtain expression for density (rho)