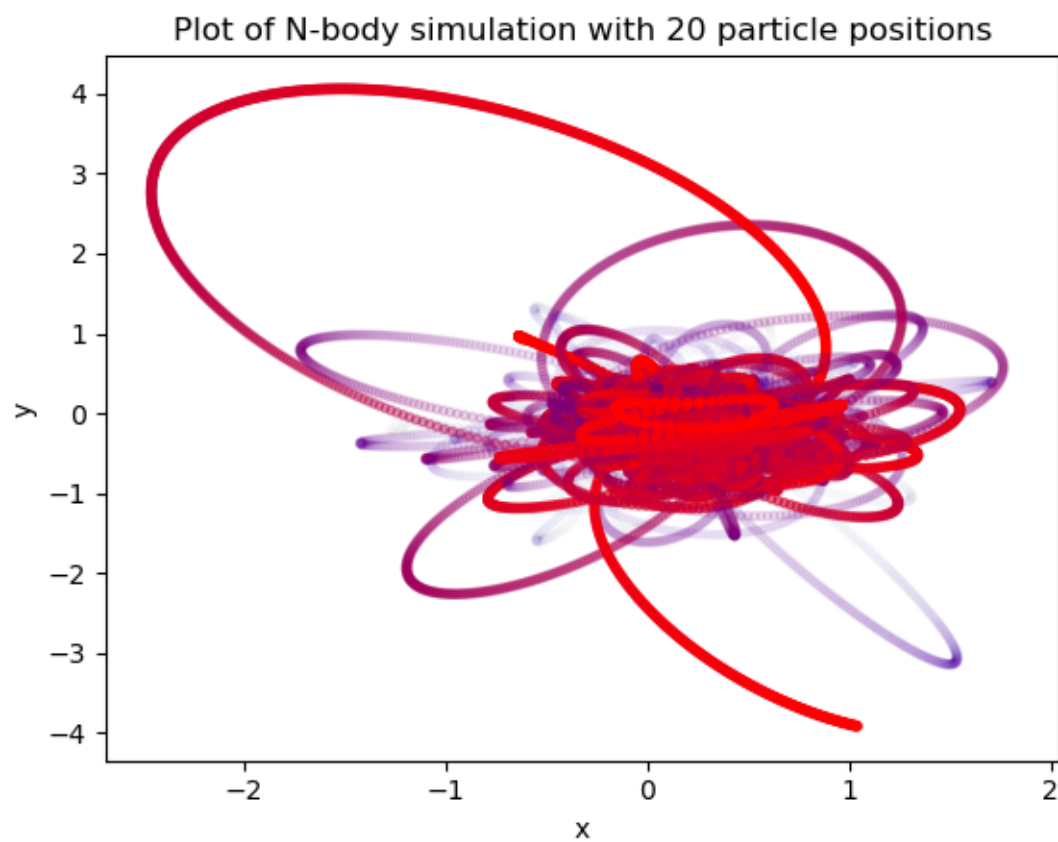# Homework 3
Philip Carr

For all orbit plots, color changes from blue to red as time advances.

1. (See code)

2. N-body simulation orbit plots (both orbit plots were produced with running the N-body simulation with all particles with 0-velocity; plots below show the trail of the orbit as well as the particles' position (at the red front of the trail)):
   N-body simulation parameters:
   Number of particles: 20
   Initial velocities of particles: 0
   Time step: 0.01
   Number of time steps: 2000
   Masses of particles: 1
   Force softening: 0.1

As shown below, the velocities of the particles change rapidly throughout the entire duration of the N-body simulation, making it very difficult to identify specific particles' velocity trails.

Plot of N-body simulation with 20 particle velocities