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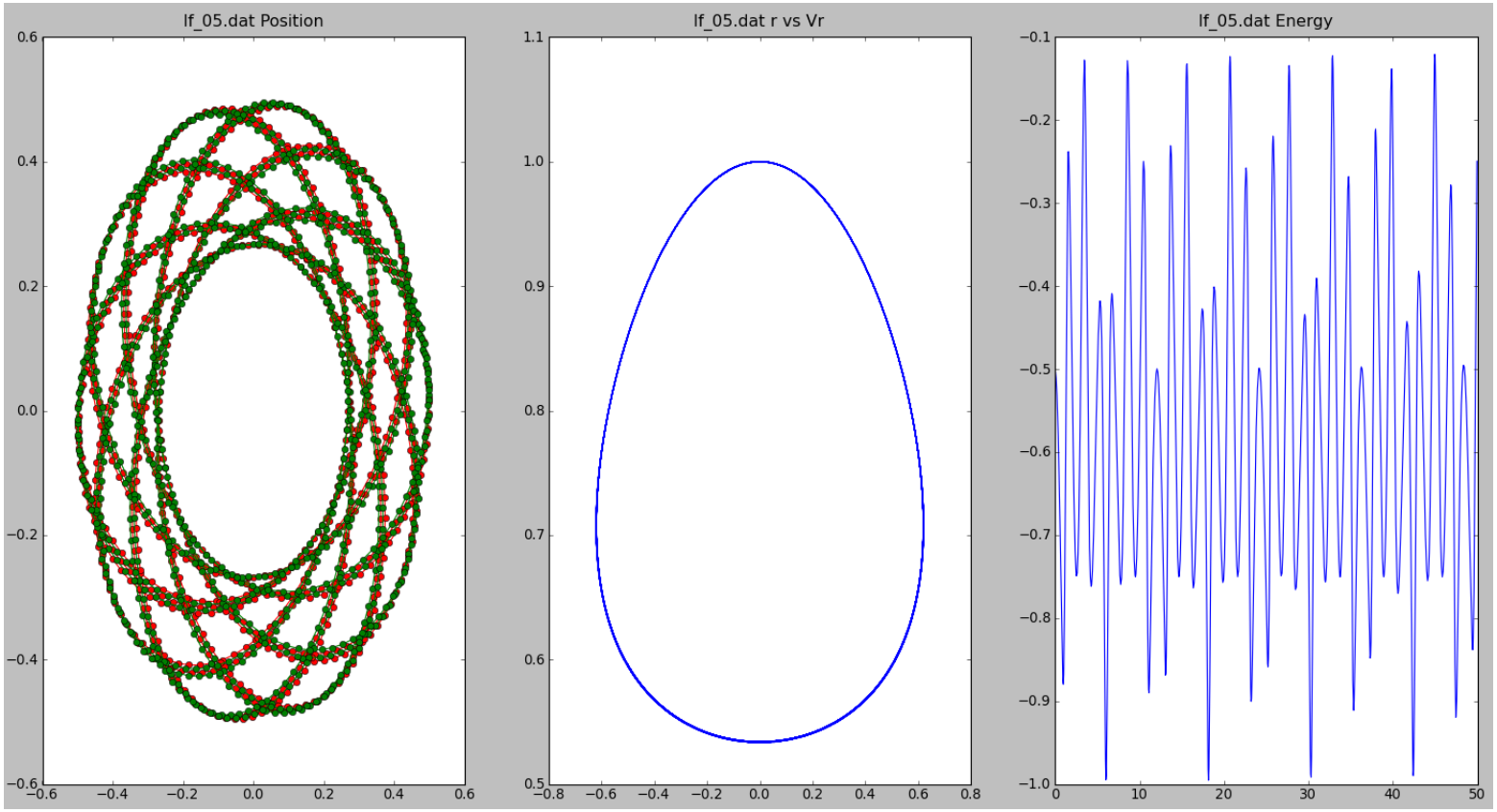
December 6, 2016

Problem Set #6



1 *Leapfrog Integration, 1000 steps, e=0.5 : The two bodies orbit one another at a large percentage of their semi-major axis. Energy fluctuates regularly over time as the bodies gain and lose kinetic and potential energy.*

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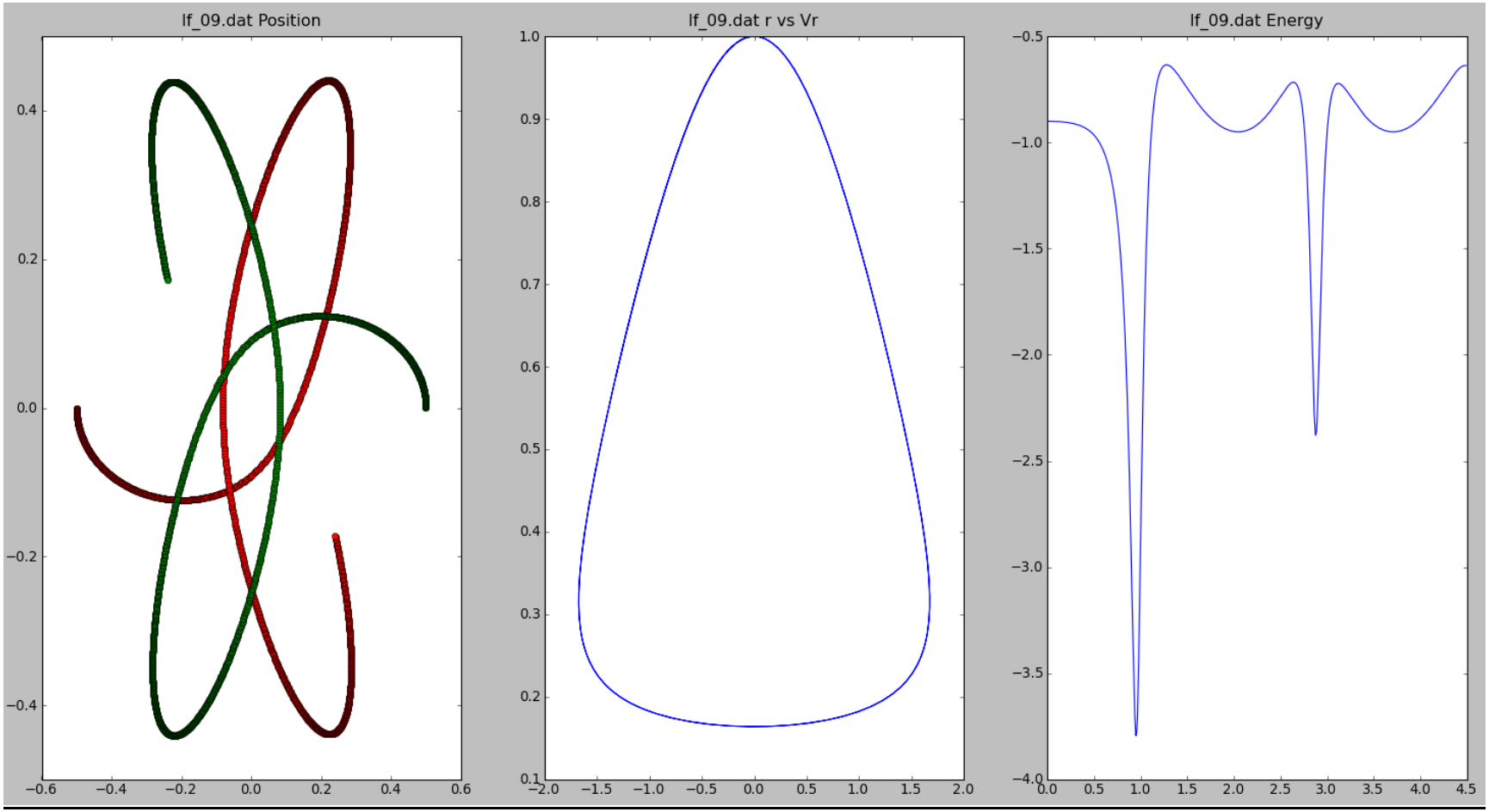

2 Leapfrog Integration, 1500 steps, e=0.9 : The two bodies orbit one another in highly eccentric orbits. Energy appears to fluctuate regularly over time, however due to the small time frame, it's hard to determine if the pattern is consistent.

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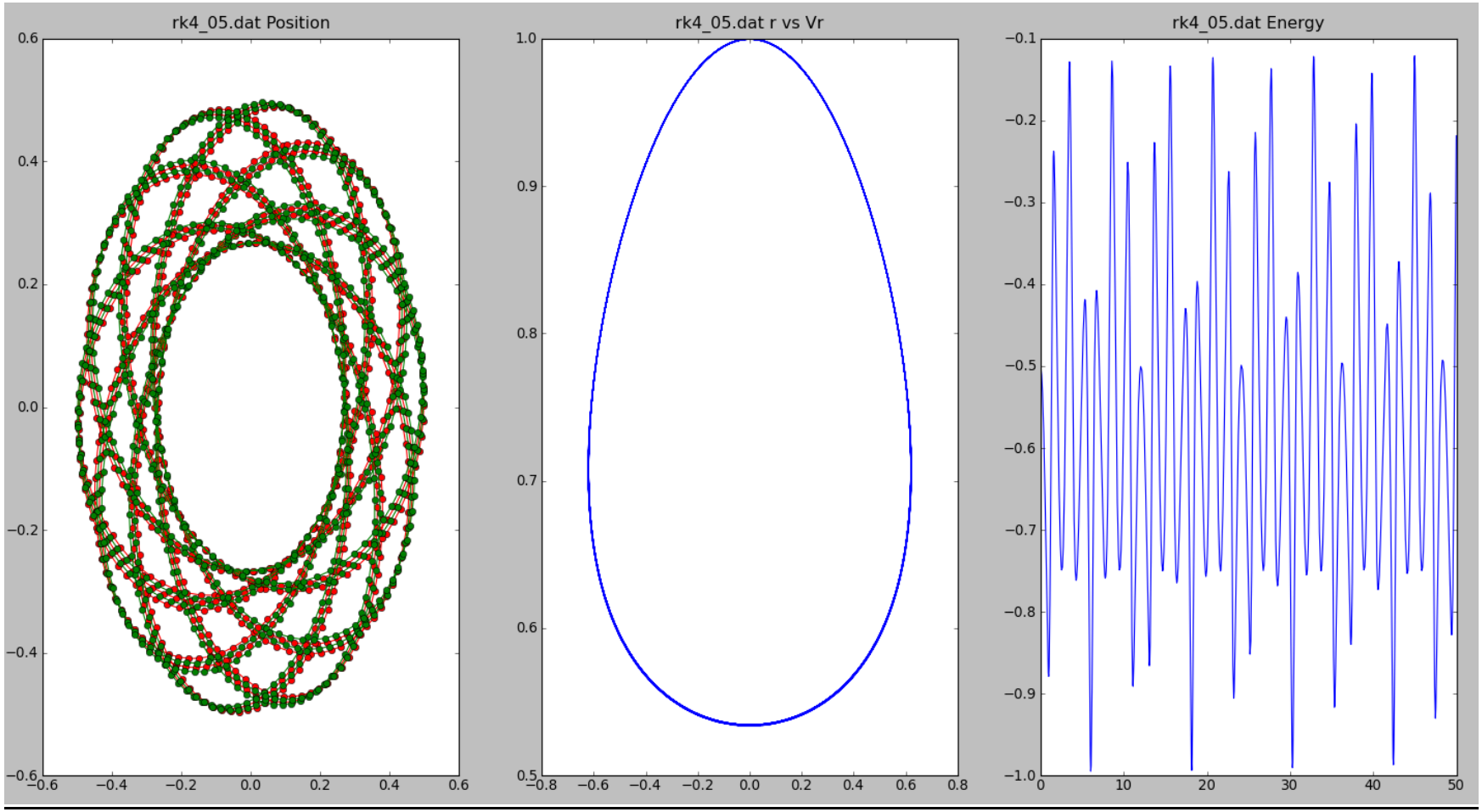

3 Runge-Kutta Integration, 1000 steps, e=0.5 : The graphs appear remarkably similar to the leapfrog integration of the same eccentricity. Positional drift seems more prominent.

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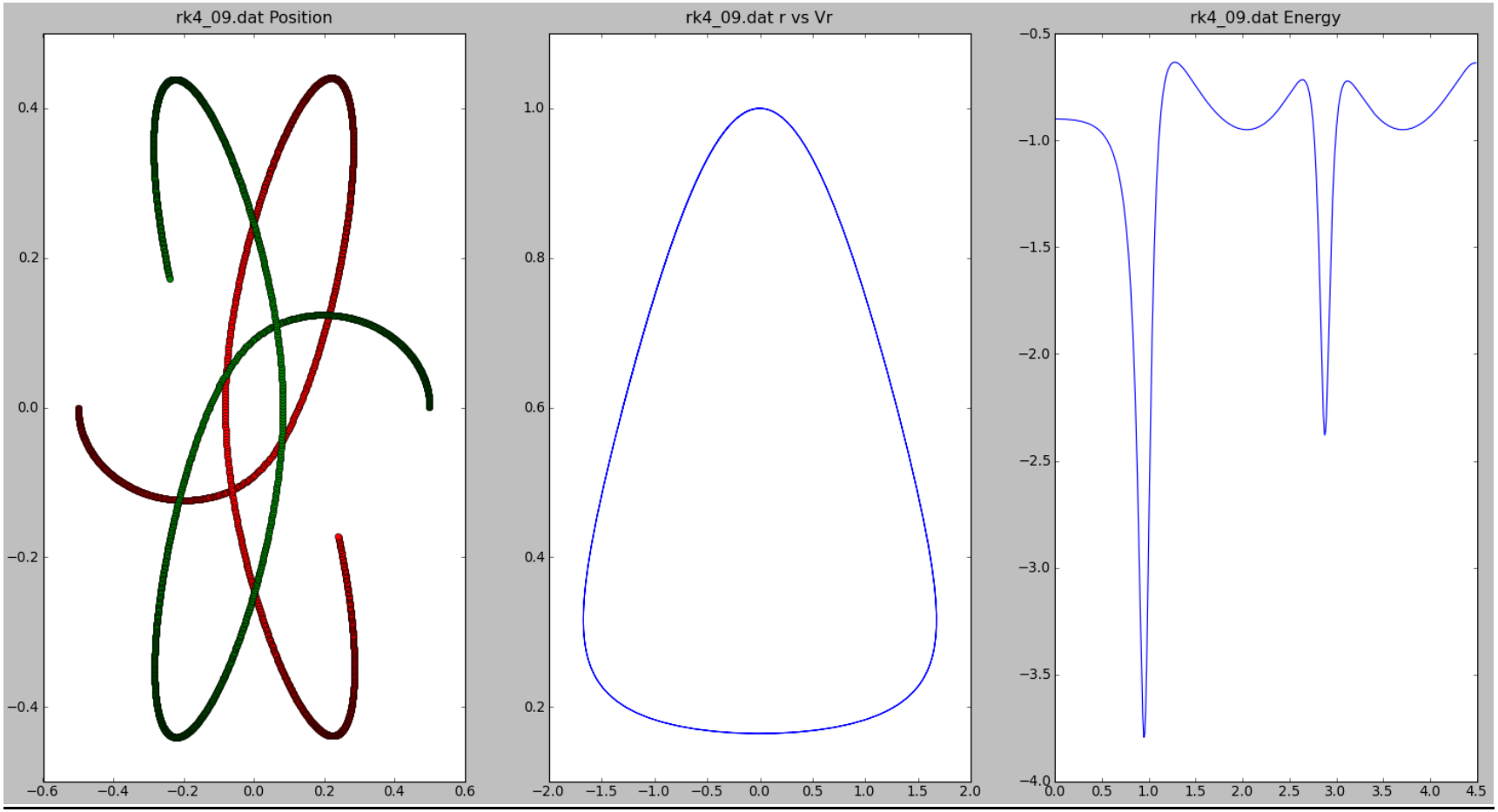

4 *Runge-Kutta Integration, 1500 steps, e=0.9 : The graphs appear remarkably similar to the leapfrog integration of the same eccentricity.*