S1336 - Project 1

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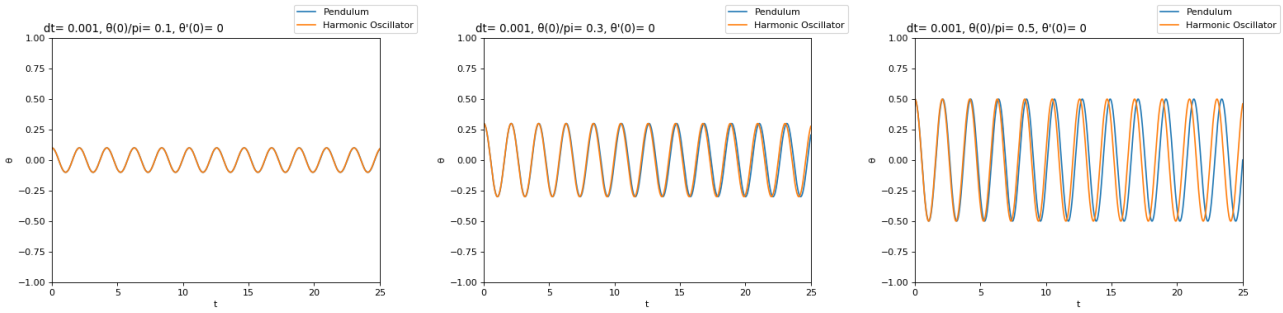
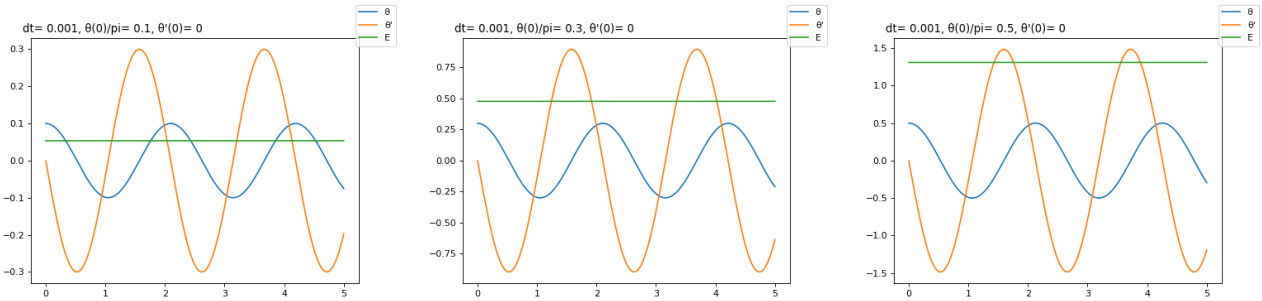
1 1.1

1.1 Pendulums vs harmonic oscillators



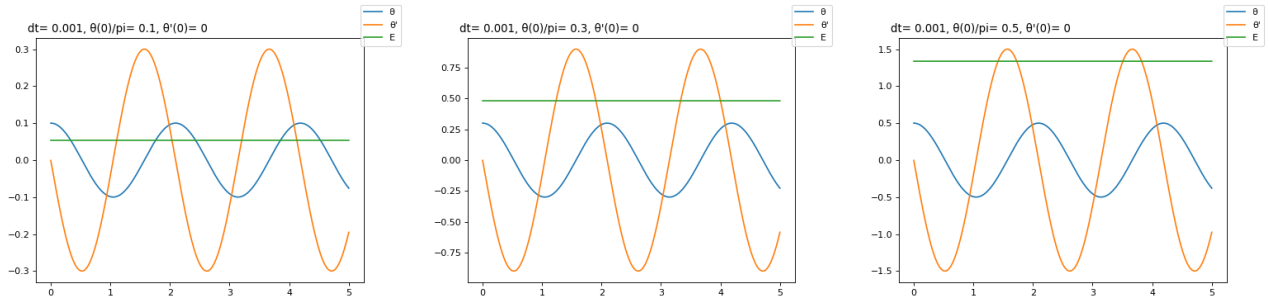
In this first part, it can be seen that a numerical solution for a pendulum has longer period than for that of a harmonic oscillator.

1.2 Pendulums: general solution



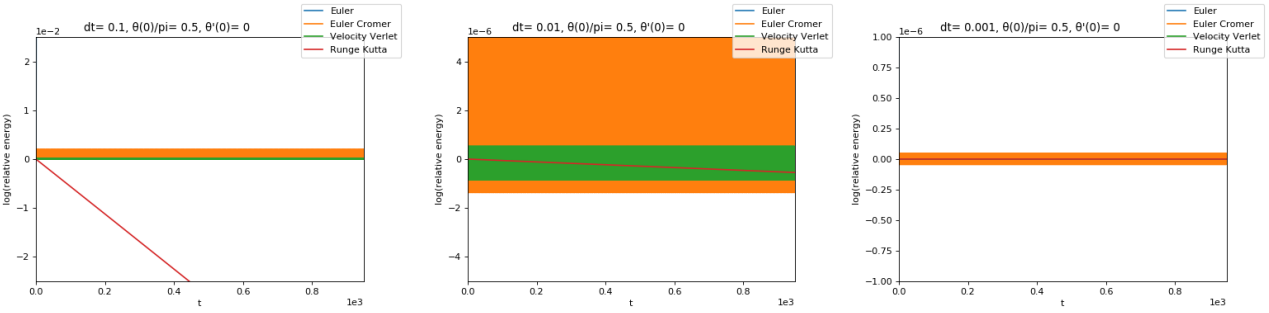
For a pendulum, the solution doesn't scale linearly with increased starting angle.

1.3 Harmonic oscillators: general solution



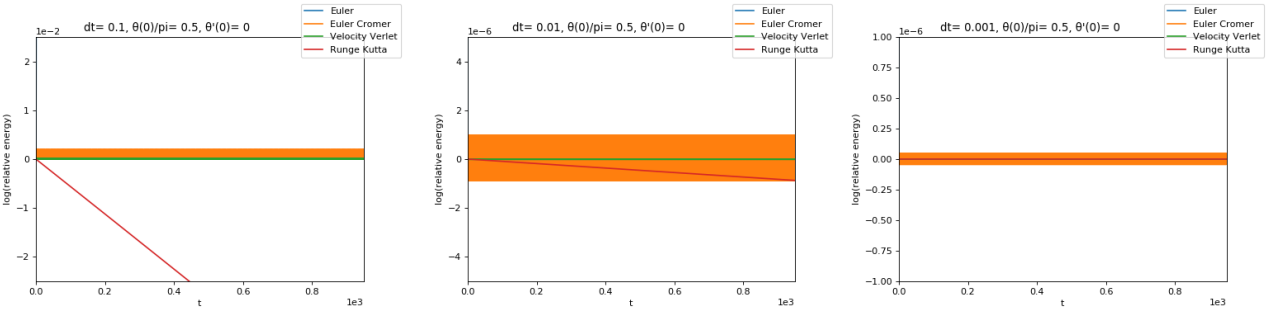
More or less the same result as for a pendulum, though with a slightly shorter period as previously shown.

1.4 Rolling mean of energy for pendulum



More or less the same result as for a pendulum, though with a slightly shorter period as previously shown.

1.5 Rolling mean of energy for harmonic oscillator



Same result as for pendulum, expected since period is almost same.