Differential equations: the pendulum

Solve ordinary differential equation for a simple harmonic oscillating system using 3 methods.
Equation of a simple pendulum: $d^2\theta/dt^2 = \ddot{\theta} = -g/L\, sin(\theta)$.
Methods for solving equation:

-Euler

$\theta(t + \delta) = \theta(t) + \dot{\theta}(t)\,\delta,$
$\dot{\theta}(t + \delta) = \dot{\theta}(t) + \ddot{\theta}(t)\,\delta$

- Midpoint

$\dot{\theta}(t + \delta) = \dot{\theta}(t) + \ddot{\theta}(t)\,\delta,$
$\theta(t + \delta) = \theta(t) + \dot{\theta}(t + \delta)\,\delta$

-Verlet

$\dot{\theta}(t + \delta/2) = \dot{\theta}(t) + 1/2\ \ddot{\theta}(t)\,\delta,$
$\theta(t + \delta) = \theta(t) + \dot{\theta}(t + \delta/2)\,\delta,$
$\dot{\theta}(t + \delta) = \dot{\theta}(t + \delta/2) + 1/2\ \ddot{\theta}(t + \delta)\delta.$

Plot the pendulum trajectory *θ(t)* for 3 time steps *δ = 0.1*, *0.01*, and *0.001*. Zoom in on the curve at one of the coarse points (say, *t = 1*) and visually compare the values from the three time steps.
Initial conditions: $\theta_0 = 2\pi/3$, $\theta = 0$, $g = 9.8\ m/s2$ and $L = 1\ m$.
All graphs should have a title, axis description and be saved to a file.
Example solution graphs are shown in Figure 1.

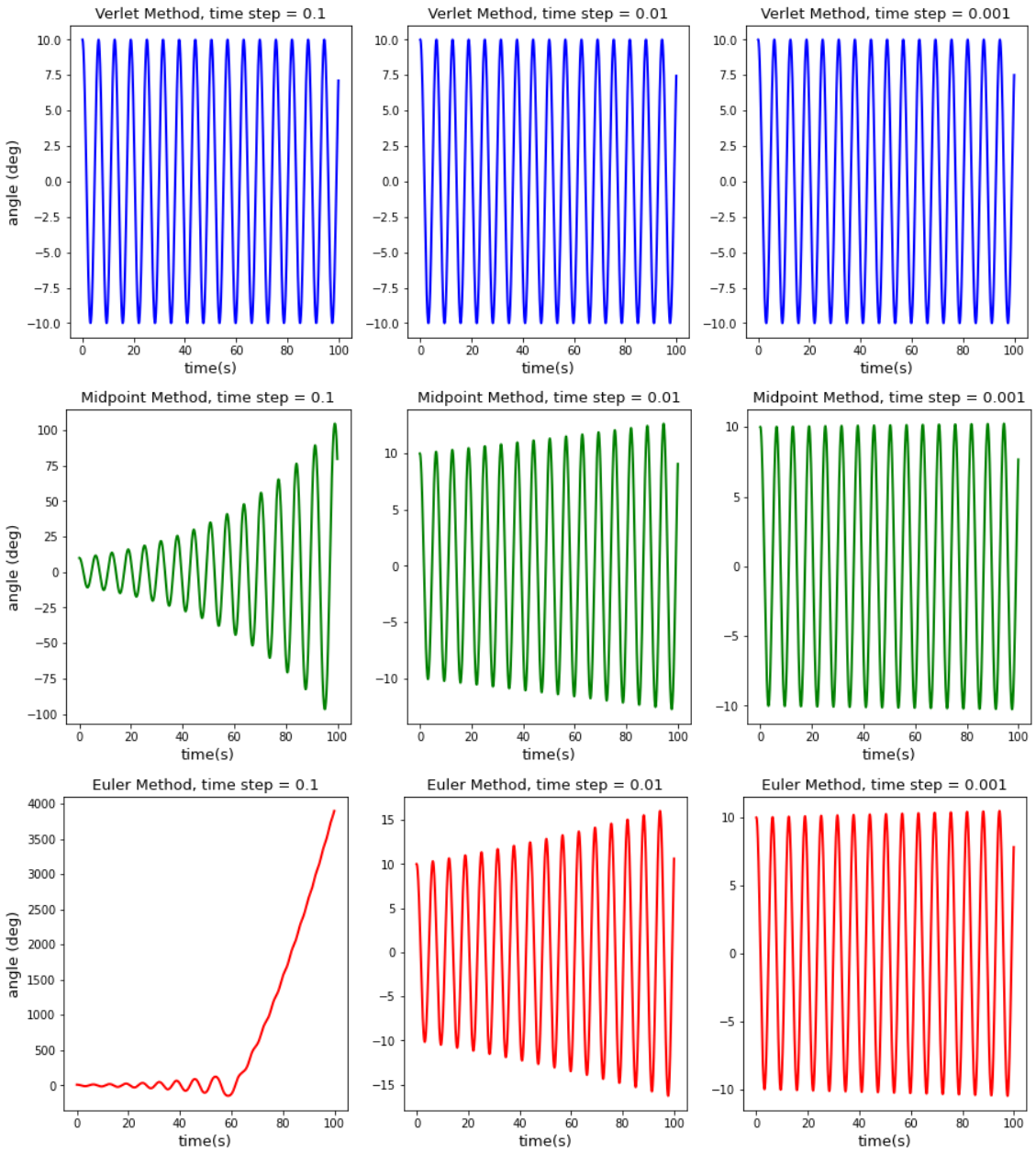

Figure 1. Example solution graphs.