

0.01 $\theta_2' = \theta_2$ | $\theta = \theta_1$
 $\theta_2' = -\frac{g}{L} \sin \theta_1$ |

i. 1.0

i) $\frac{d\theta_1}{dt} = f_1(t, \theta_1, \theta_2) = \theta_2$

Very disorganized coding. Am I supposed

$\frac{d\theta_2}{dt} = f_2(t, \theta_1, \theta_2) = -\frac{g}{L} \sin \theta_1$

ii. 1.5

Initial conditions:

$\theta(t=0) = 0$, and $\frac{d\theta}{dt}|_{t=0} = 0$

y_next = rk4_next_val(fy(z_next), x_next, y_next, h)z_next

$\Rightarrow \theta_1[0] = 0, \theta_2[0] = 0, L = 10 \text{ cm}$

iii. 0

→ Solve using Simple

Did not calculate period for Euler method. Also did not explain the issues on I

ii) $\theta_0 = 10^\circ$

Simple Euler: $y(x_0 + h) = y_0 + h f_0$

↳ function:

↳ Euler_Cb (x, x0, y0, z0, dy, dz, tolerance)

iv. 2.5

return value at (x).

Did not workout for theta=170

$x = t, \theta_1 = y, \theta_2 = z$

code for calculating the period is not working.

$\frac{dy}{dt} = z, \frac{dz}{dt} = \left(-\frac{g}{L}\right) \sin(y)$

$y \left[\begin{matrix} x_0 = 0, y_0 = \theta_0, z_0 = 0 = \frac{d\theta_1}{dt} \end{matrix} \right]$

v. 0

No integration code