

Name: _____ UIN: _____ Section: _____ Score: _____

Calculate δ and ω for the first three time steps of the following initial value problem using Euler's method and a time step of $\Delta t = 0.1$ seconds:

Euler's method
 $x(t + \Delta t) = x(t) + \Delta t \cdot f(x)$
 Where $f(x) = \dot{x}$

$$\dot{\delta} = \omega$$

$$\dot{\omega} = 10 - 205 \sin \delta$$

$$\delta(0) = 0.05 \text{ radians}$$

$$\omega(0) = 0$$

t	δ	ω	$\dot{\delta}$	$\dot{\omega}$
0	0.05	0	0	-0.2457
0.1	0.05	-0.02457	-0.02457	-0.2457
0.2	0.0475	-0.04915	-0.04915	0.2574
0.3	0.0426	-0.02340	-0.0234	1.2638