

Solving of the equation of motion numerically:

$$\omega = \sqrt{\frac{k}{m}} \quad \omega := .2 \quad v_0 := 1 \quad t_0 := 1 \quad \mu := .3 \quad g := 9.8$$

replacing t by: $t - t_0$

$$\Delta T := 100$$

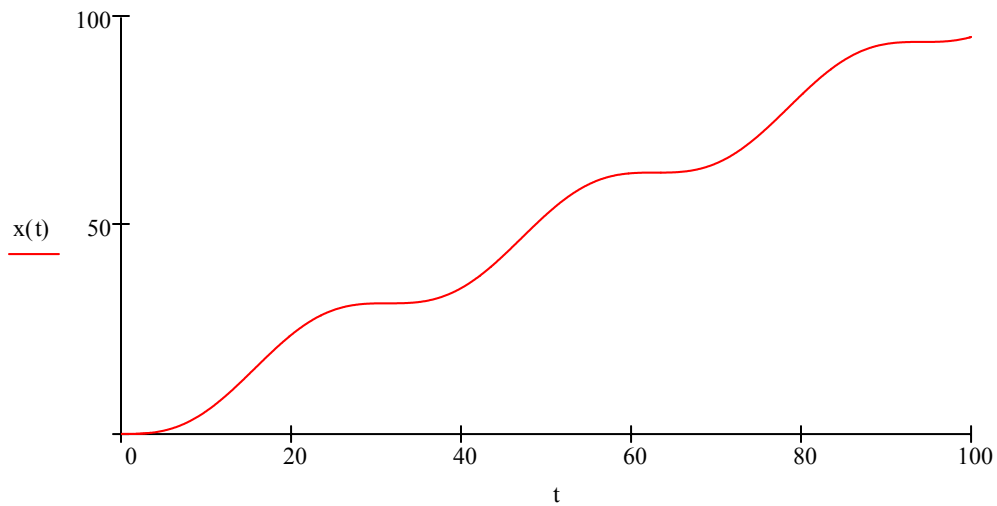
Given

$$\frac{d^2}{dt^2}x(t) + \omega^2 \cdot x(t) = \omega^2 \cdot v_0 \cdot t$$

$$x(0) = 0$$

$$x'(0) = 0$$

$x := \text{Odesolve}(t, \Delta T)$



Analytical Solution:

$$t := t_0, t_0 + .1 .. 100$$

$$x(t) := v_0 \cdot \left[t - \frac{\sin[\omega \cdot (t - t_0)]}{\omega} - t_0 \right]$$

$$v(t) := \frac{d}{dt}x(t)$$

