GRAVIMETRIC CAPACITIVE MASS FLUCTUATION

(MathCAD SIMULATION)

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The Capacitive NEGISTOR

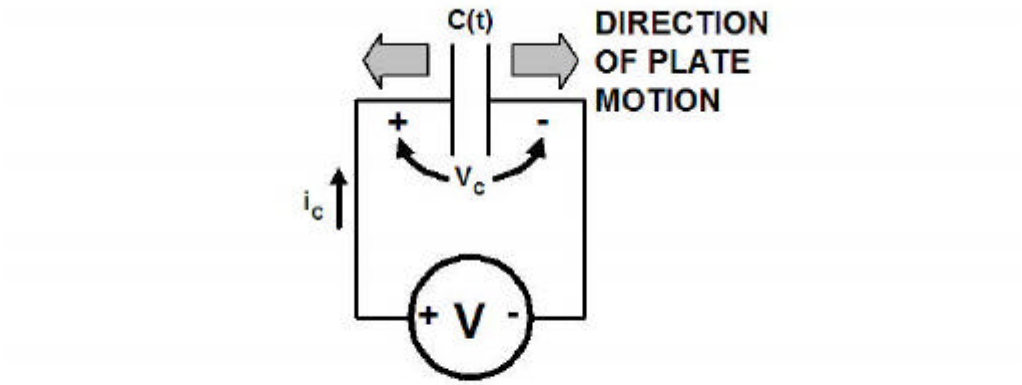

Figure 1. A fluctuating capacitor C with Constant Voltage Source

Given:

$V := 12 \cdot volt$ $Cstart := 10 \cdot \mu F$

$Tstart := 0 \cdot sec$ $Tend := 1 \cdot sec$ $Tstep := 0.001 \cdot sec$

$t := Tstart, Tstep .. Tend$ $c := 2.9979 \cdot 10^{8} \cdot \frac{m}{sec}$ $g := 9.8 \cdot \frac{m}{sec^2}$

Motion Profile of Capacitor Plate:

$$k(t) := 1 - \exp\left[\frac{\text{sec}}{-(t + 0.03\cdot\text{sec})\cdot 4}\right] \qquad K := 1 - \exp\left[\frac{\text{sec}}{-(\text{Tend} + 0.03\cdot\text{sec})\cdot 4}\right]$$

$$C(t) := \text{Cstart}\cdot k(t) \qquad \text{Cend} := \text{Cstart}\cdot K \qquad \text{Cend} = 2.155\times 10^{-6}\,\text{F}$$

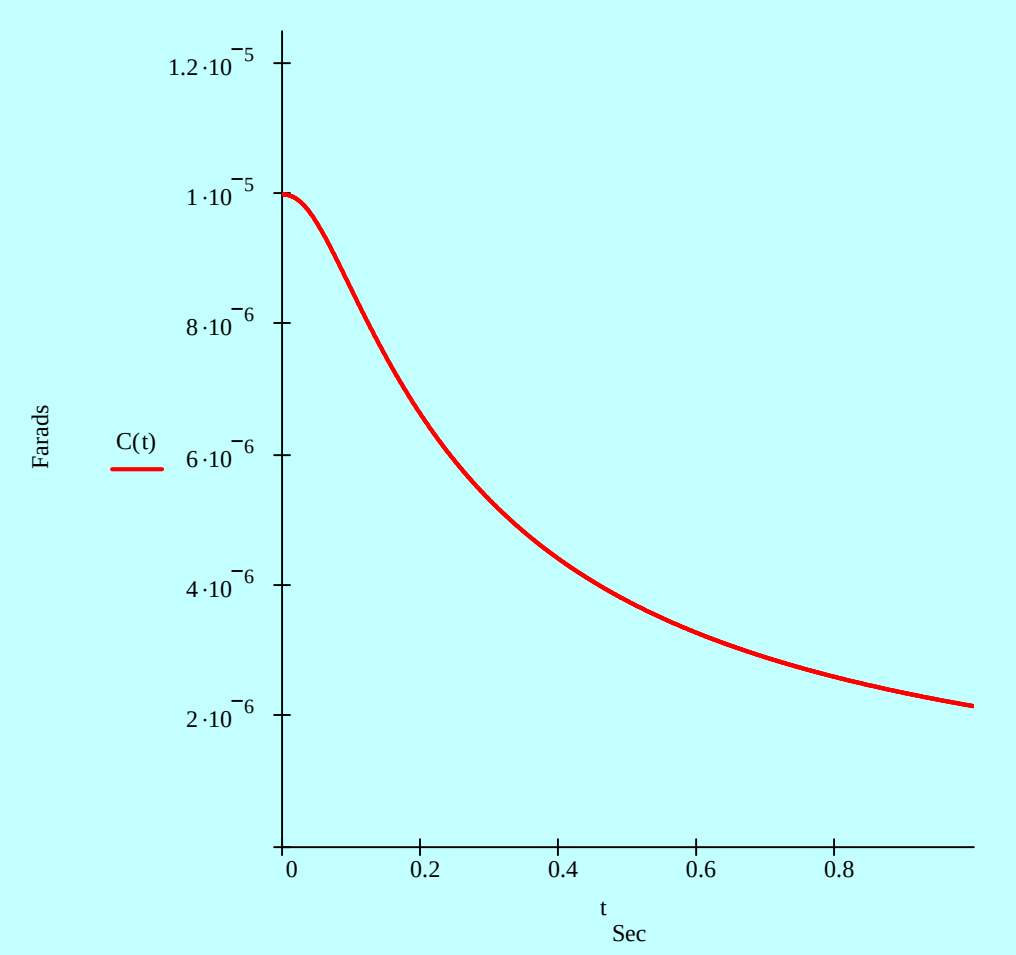

Figure 2. Ideal Capacitance vs. time

Compute Ideal Capacitor Gravimetric Conductance Term:

$$CDOT(t) := \frac{d}{dt} C(t)$$

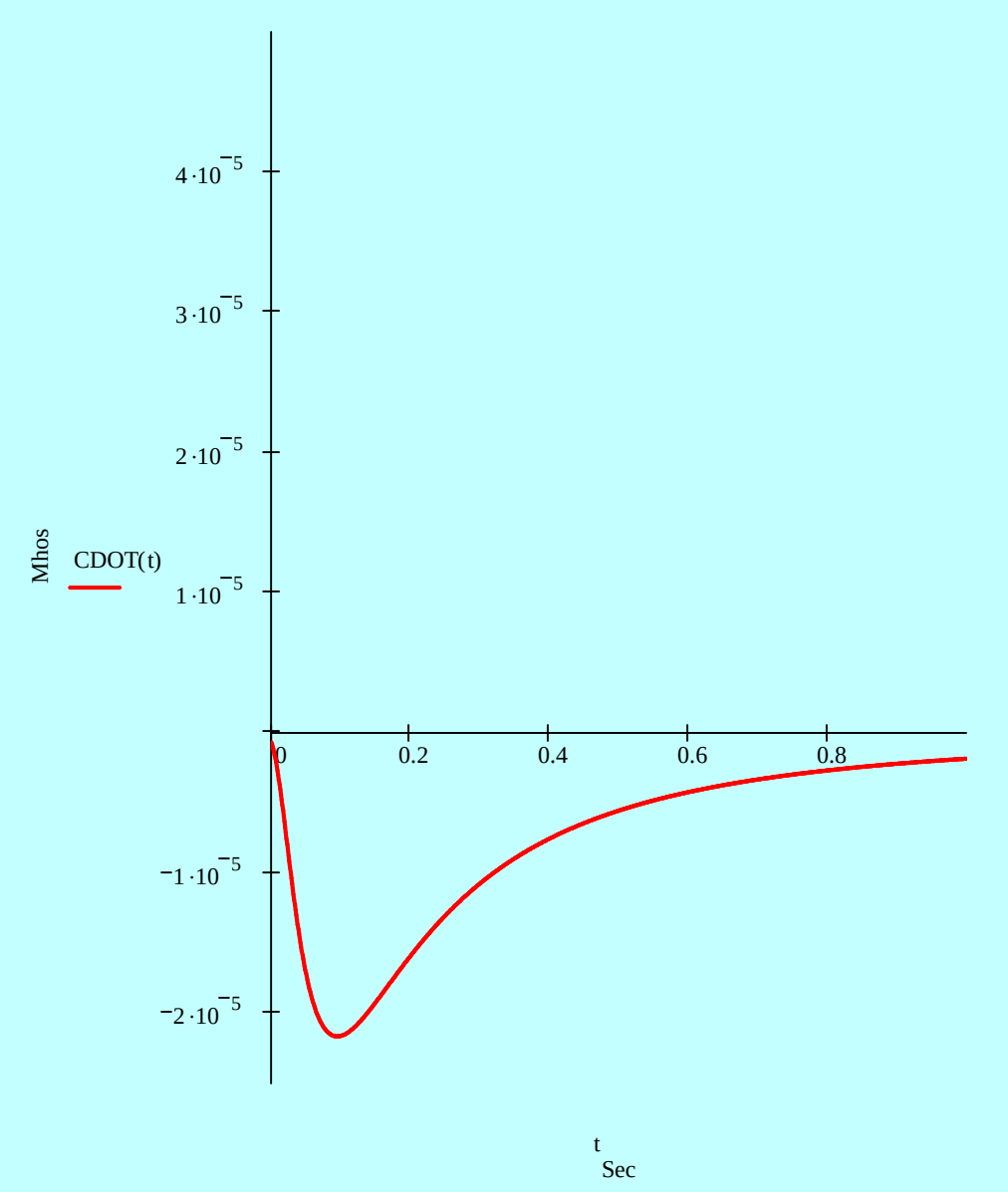

Figure 3. Ideal conductance vs. time

Compute Ideal Capacitor Gravimetric Resistance Term:

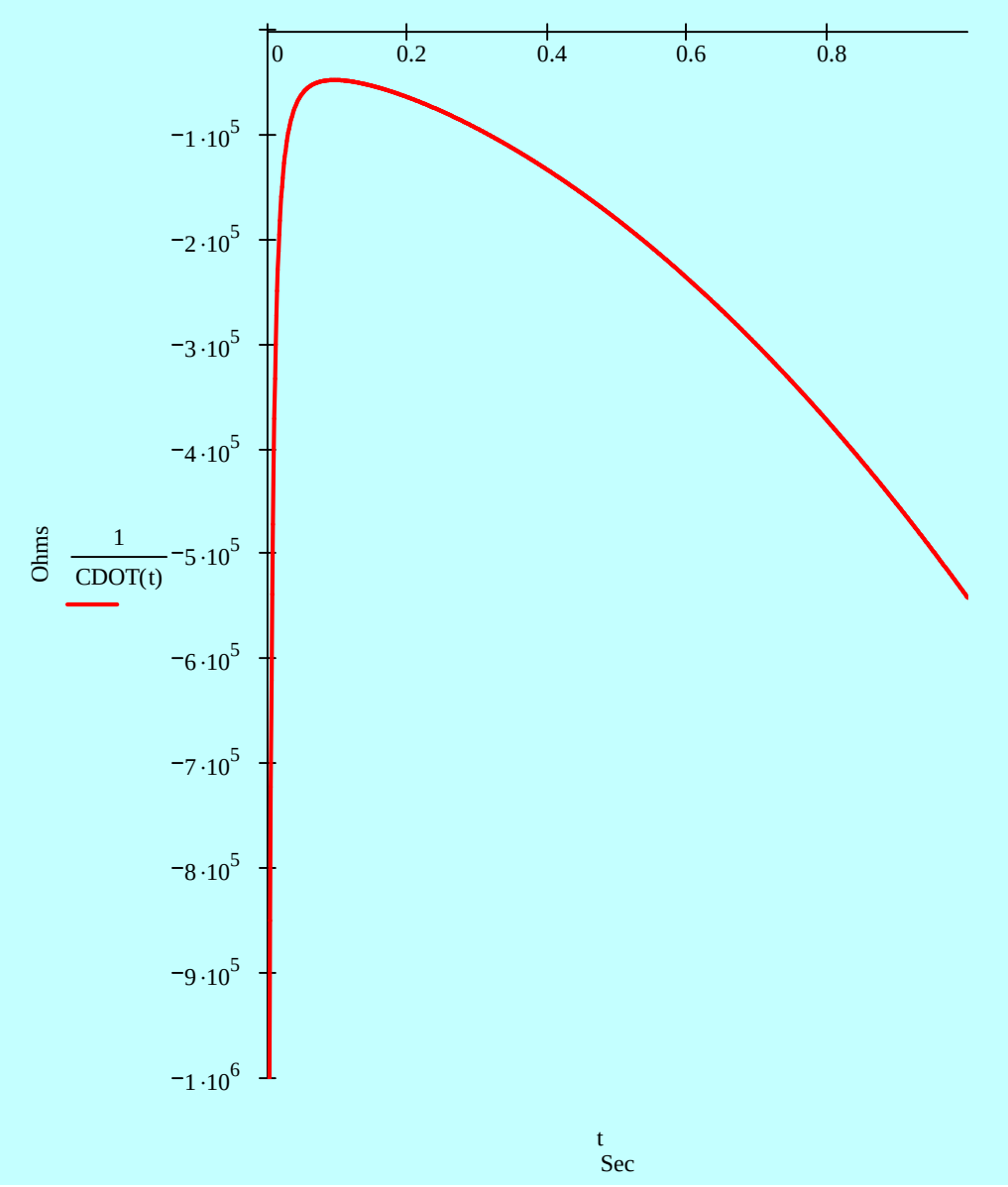

Figure 4. Ideal resistance vs. time

Compute Ideal Capacitor Gravimetric Current Term:

$i(t) := V \cdot CDOT(t)$

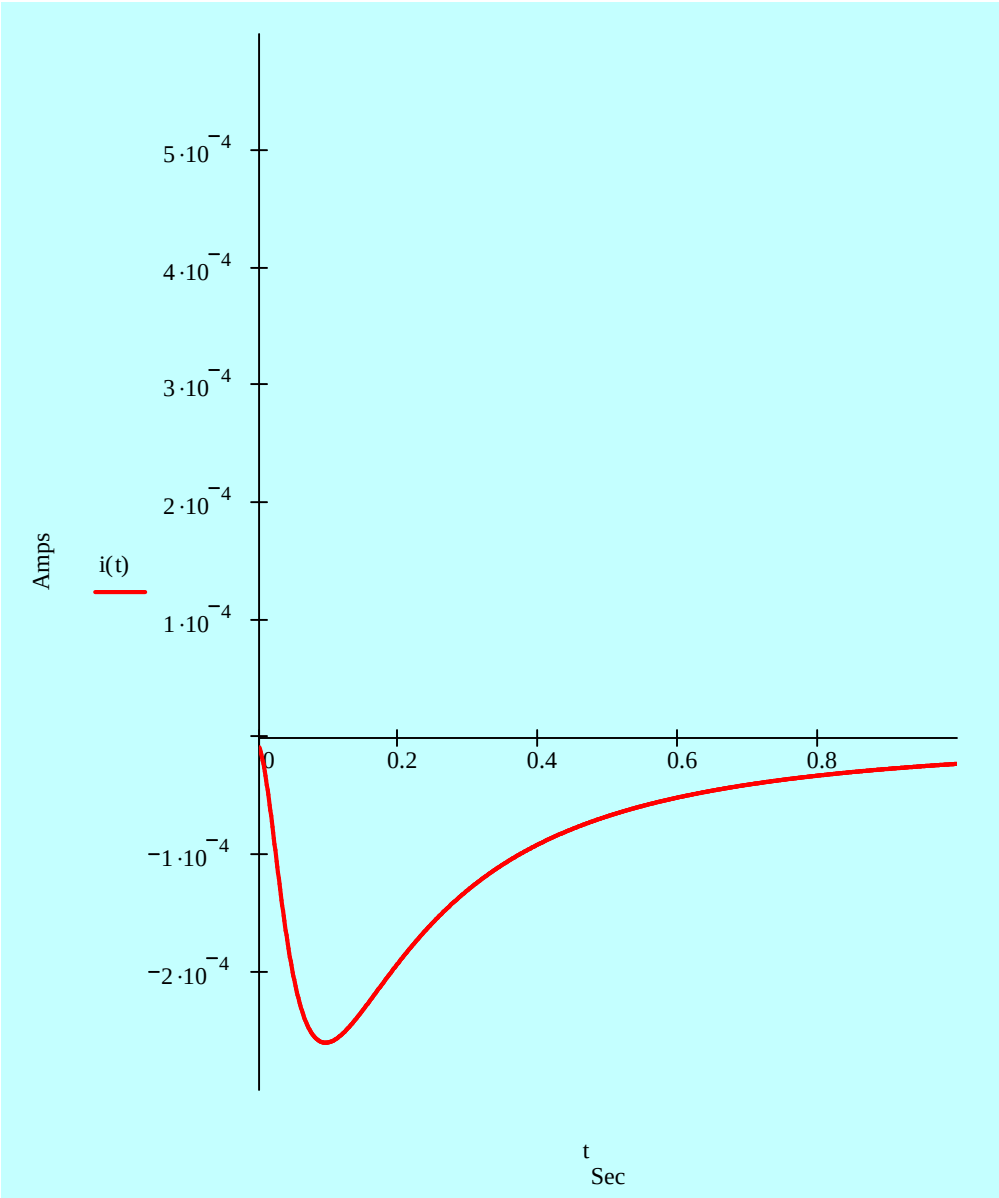

Figure 5. Ideal capacitor amperage vs. time

Compute Ideal Power Absorbed by Capacitor:

$P(t) := V \cdot i(t)$

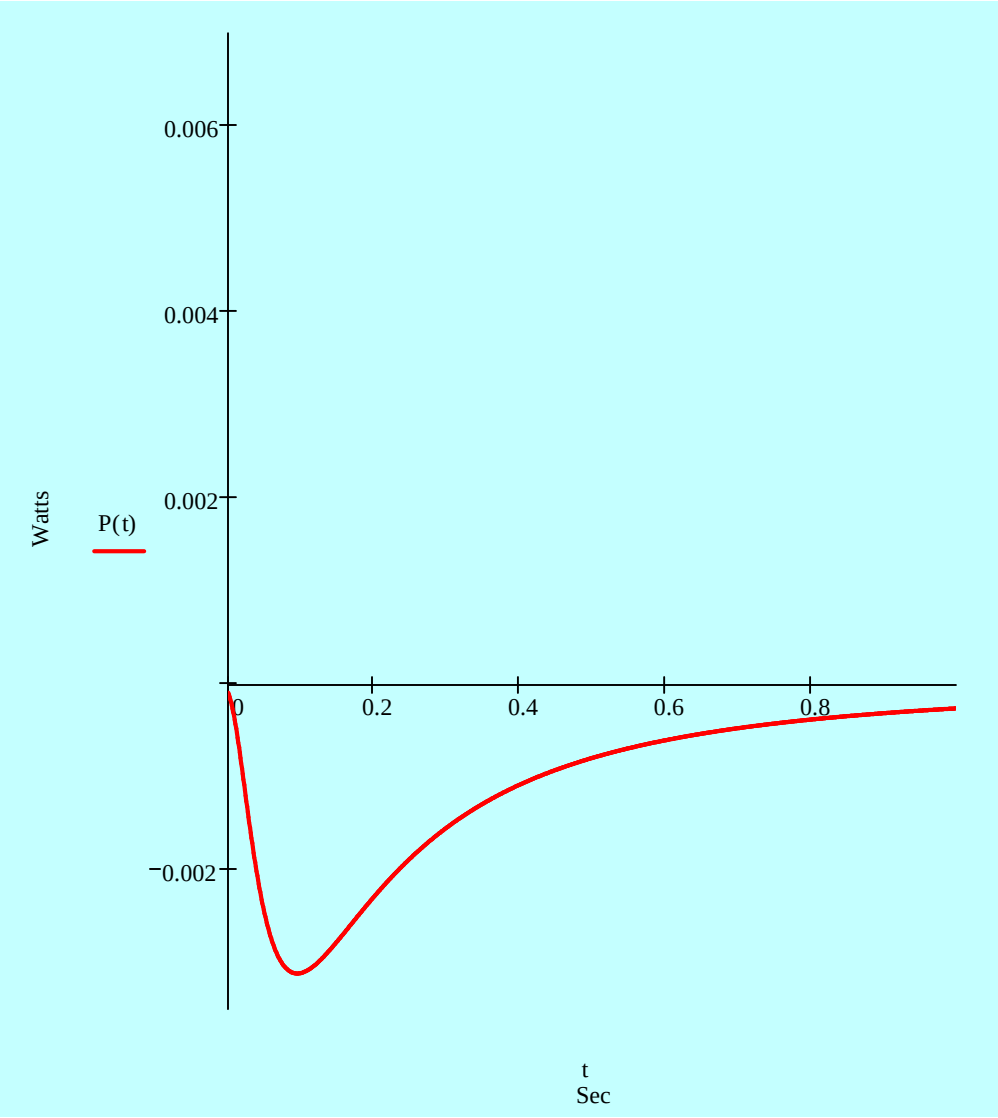

Figure 6. Ideal capacitor power vs. time

Compute Ideal Energy Stored in Capacitor:

$$E(t) := \int_{Tstart}^{t} P(t)\, dt$$

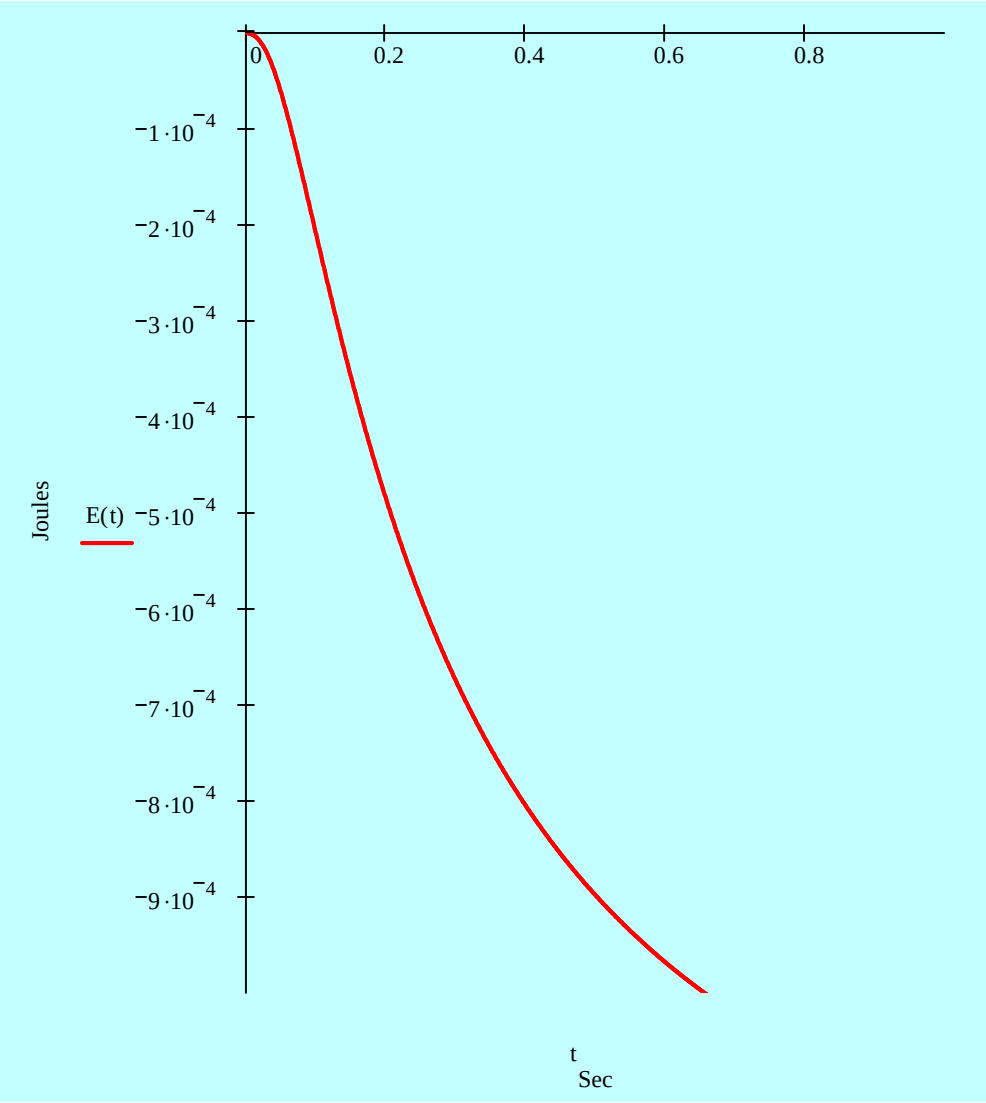

Figure 7. Ideal capacitor energy vs. time

Compute Ideal Mass Change of Capacitor:

$$M(t) := \frac{E(t)}{c^2}$$

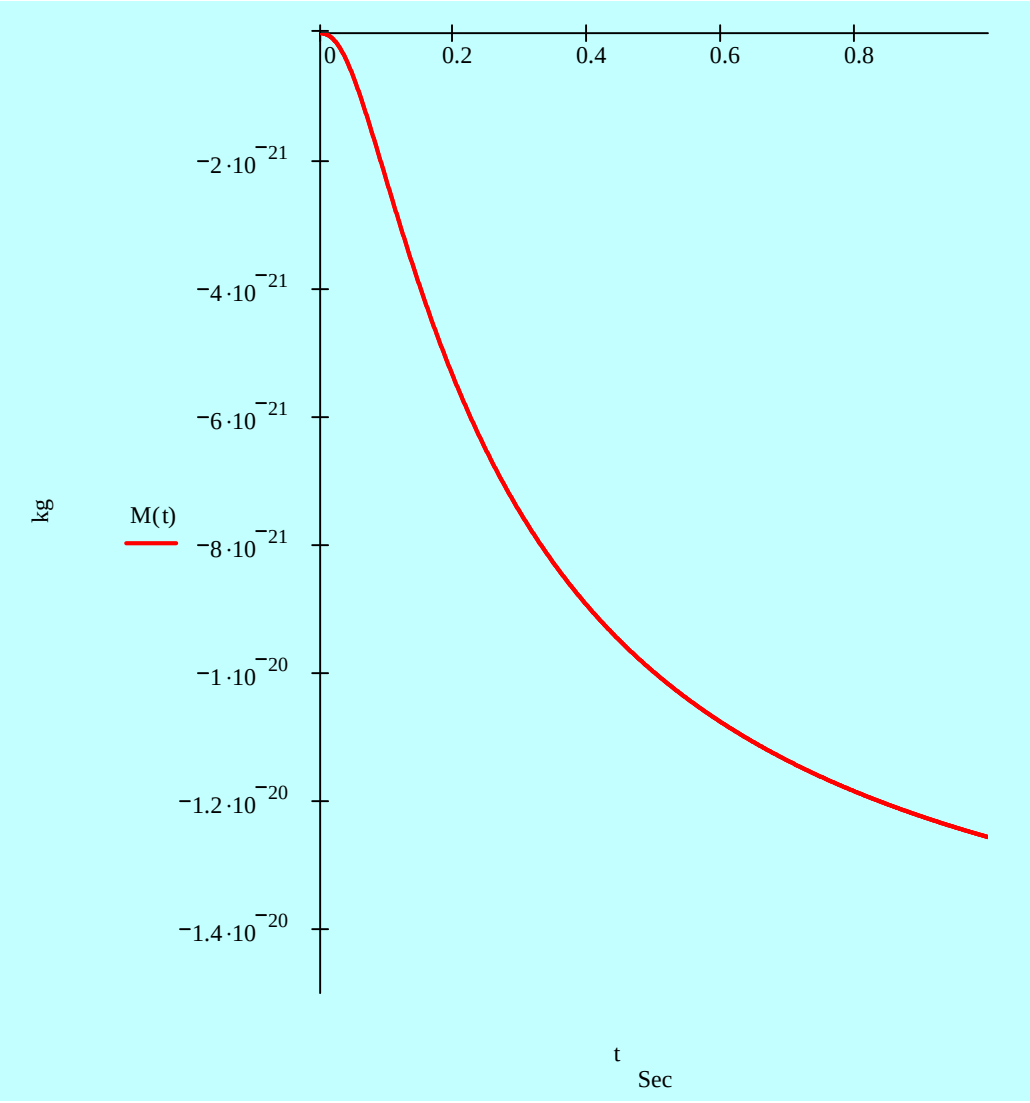

Figure 8. Mass vs. time

Compute Instantaneous Velocity of Capacitor on the Earth:

$$\text{velocity}(t) := g \cdot \frac{C(t)}{CDOT(t)}$$

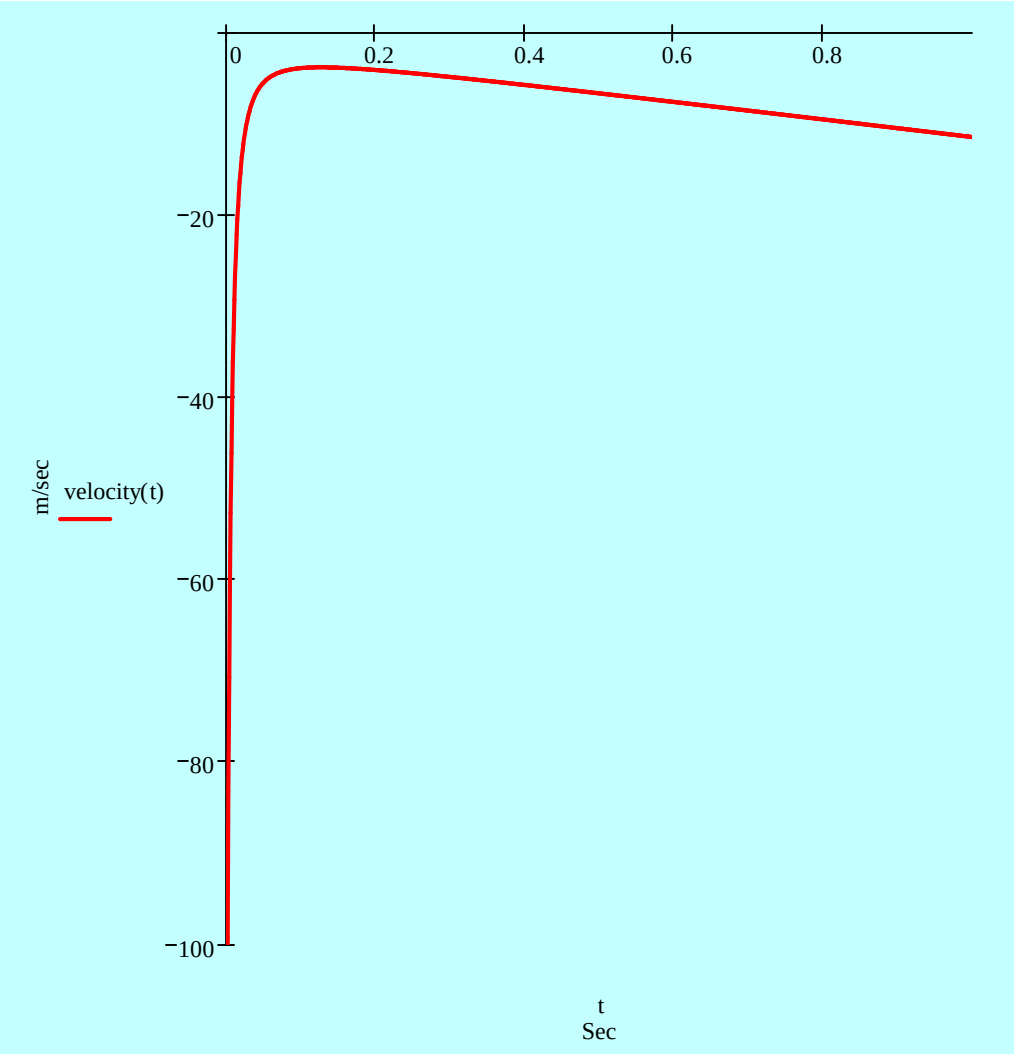

Figure 9. Capacitor velocity vs. time

Compute non-Newtonian Force Produced By Capacitor:

$$F(t) := \text{velocity}(t)\cdot\frac{d}{dt}M(t)$$

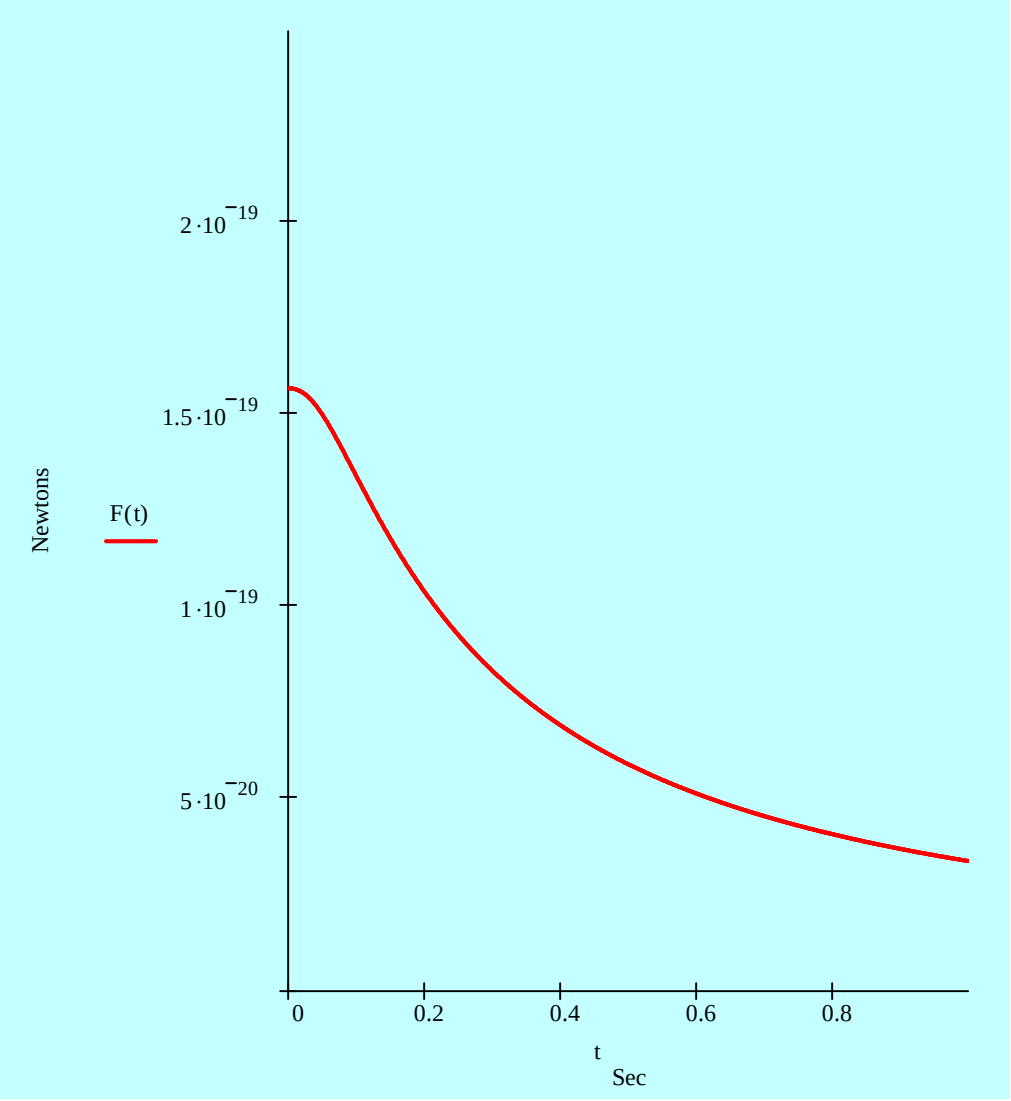

Figure 10. Force vs. time

The Capacitive POSISTOR

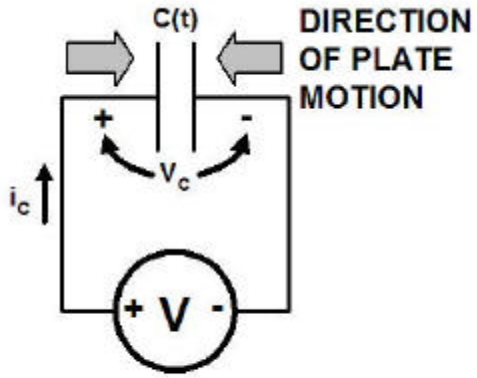

Figure 11. A fluctuating capacitor C with Constant Voltage Source

Given:

$V := 12 \cdot volt$ $Cstart := 10 \cdot \mu F$

Motion Profile of Capacitor Plate:

$$k(t) := 1 + \left(\frac{t^2 \cdot 6.5}{sec^2}\right) - \frac{t^3 \cdot 3.3}{sec^3} \qquad K := 1 + \left(\frac{Tend^2 \cdot 6.5}{sec^2}\right) - \frac{Tend^3 \cdot 3.3}{sec^3}$$

$$C(t) := Cstart \cdot k(t) \qquad Cend := Cstart \cdot K \qquad Cend = 4.2 \times 10^{-5}\,F$$

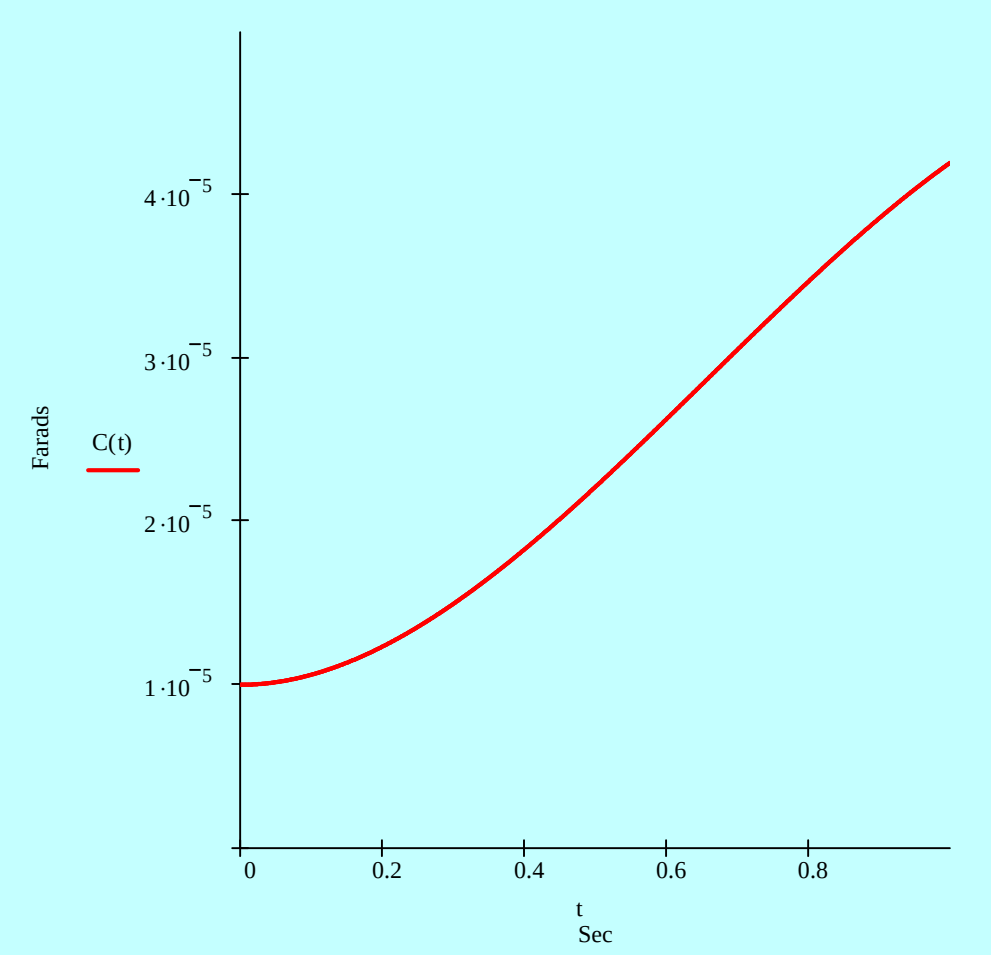

Figure 12. Ideal capacitance vs. time

Compute Ideal Capacitor Gravimetric Conductance Term:

$$CDOT(t) := \frac{d}{dt}C(t)$$

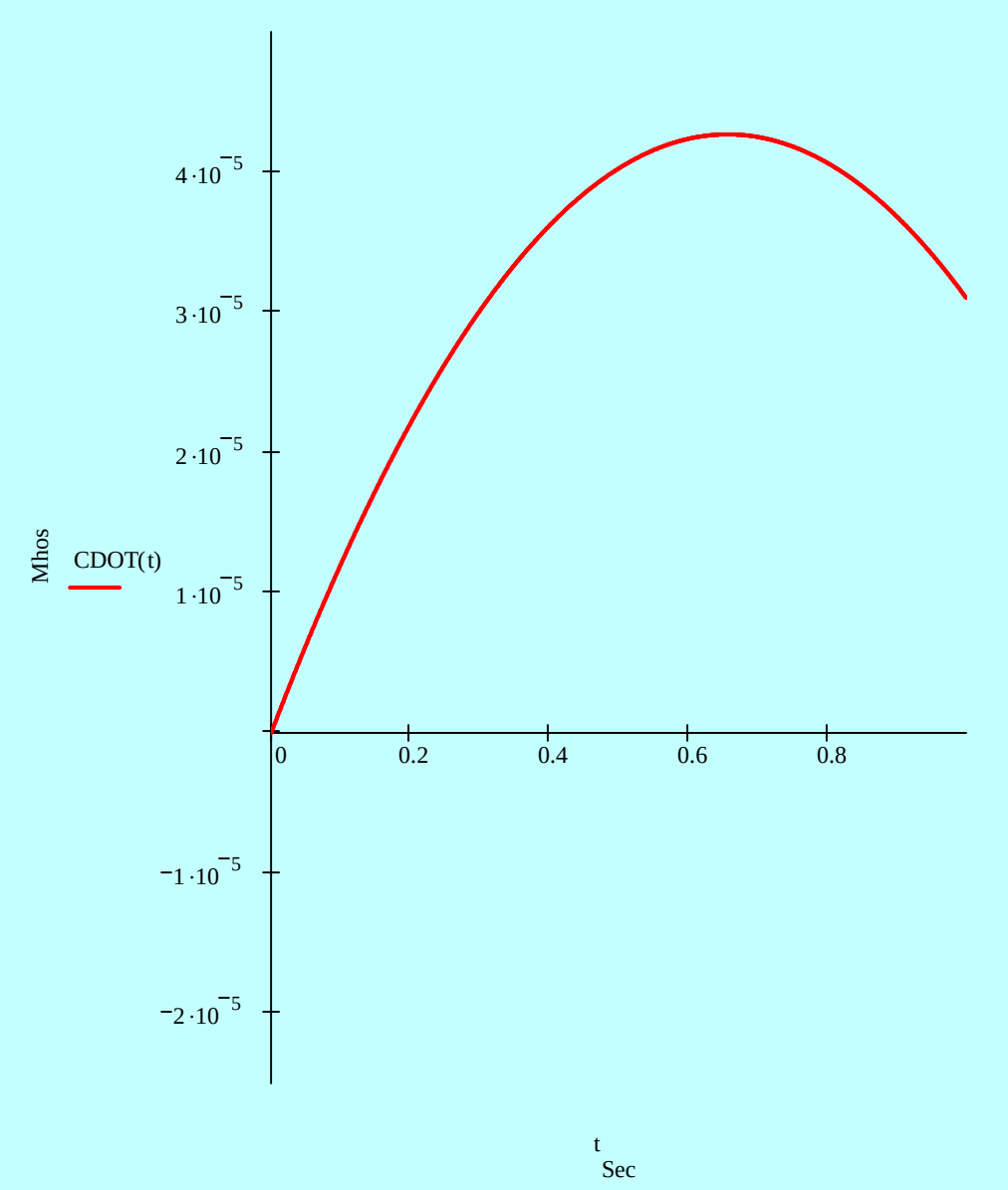

Figure 13. Ideal conductance vs. time

Compute Ideal Capacitor Gravimetric Resistance Term:

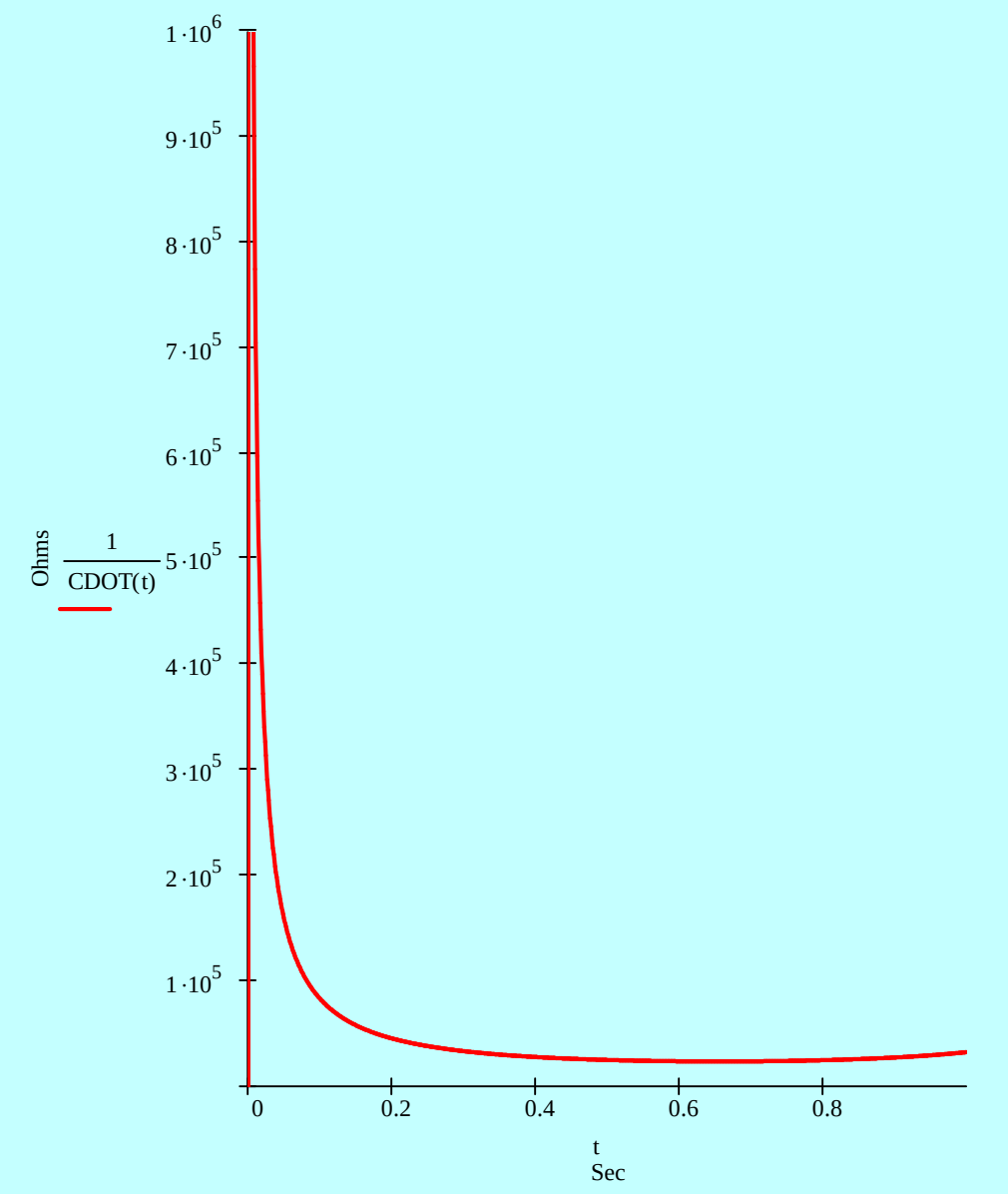

Figure 14. Ideal resistance vs. time

Compute Ideal Capacitor Gravimetric Current Term:

$i(t) := V \cdot CDOT(t)$

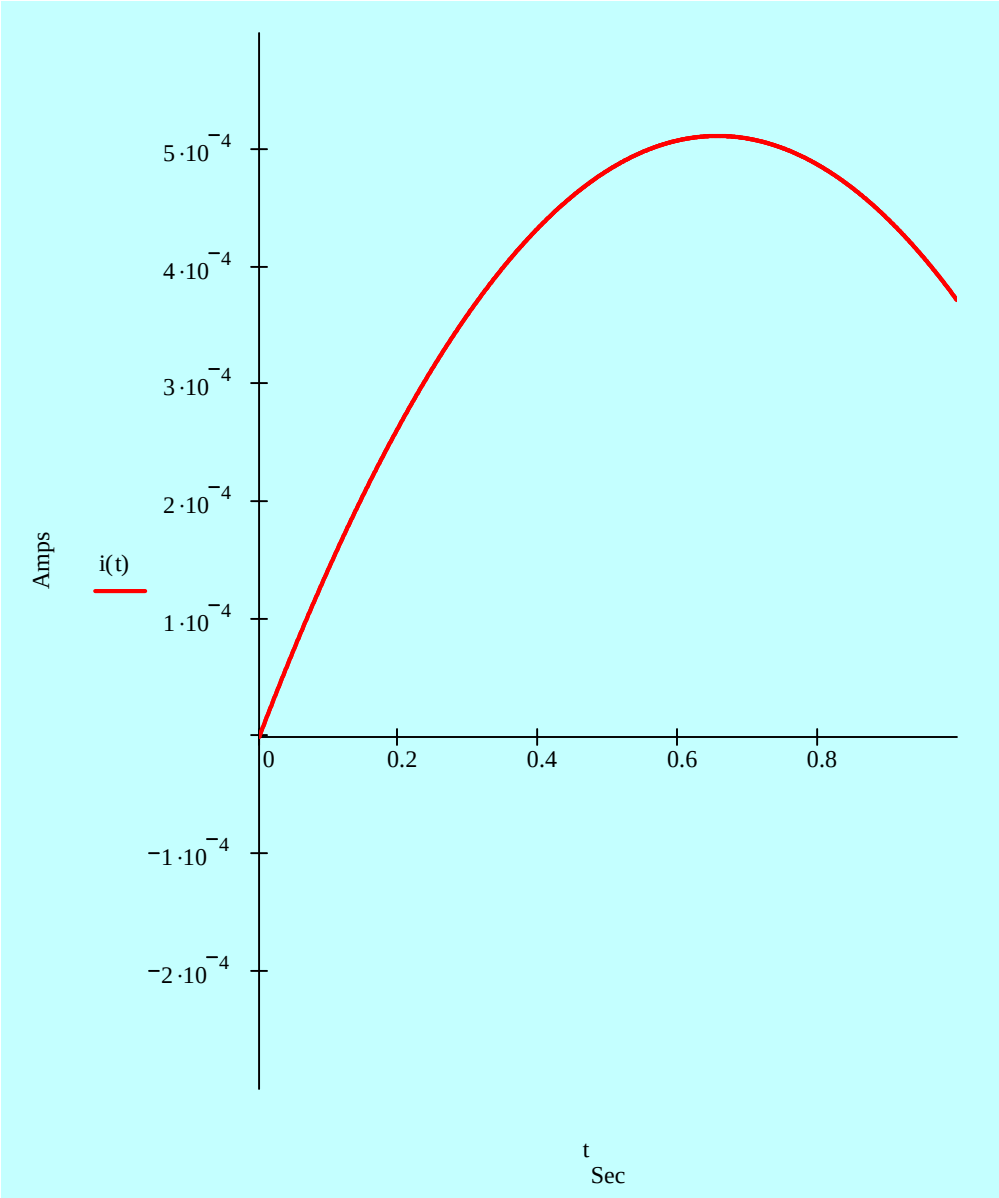

Figure 15. Ideal capacitor amperage vs. time

Compute Ideal Power Absorbed by Capacitor:

$P(t) := V \cdot i(t)$

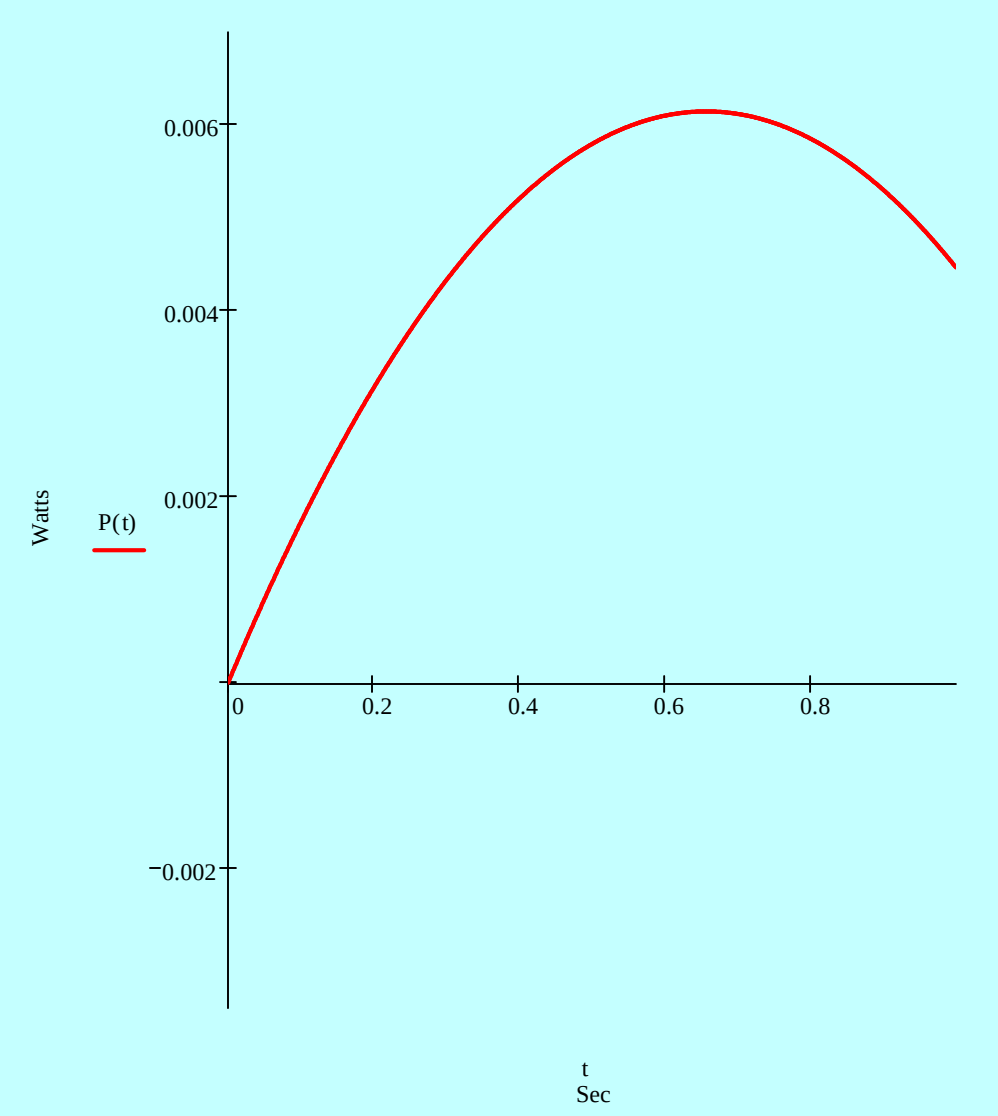

Figure 16. Ideal capacitor power vs. time

Compute Ideal Energy Stored in Capacitor:

$$E(t) := \int_{Tstart}^{t} P(t)\, dt$$

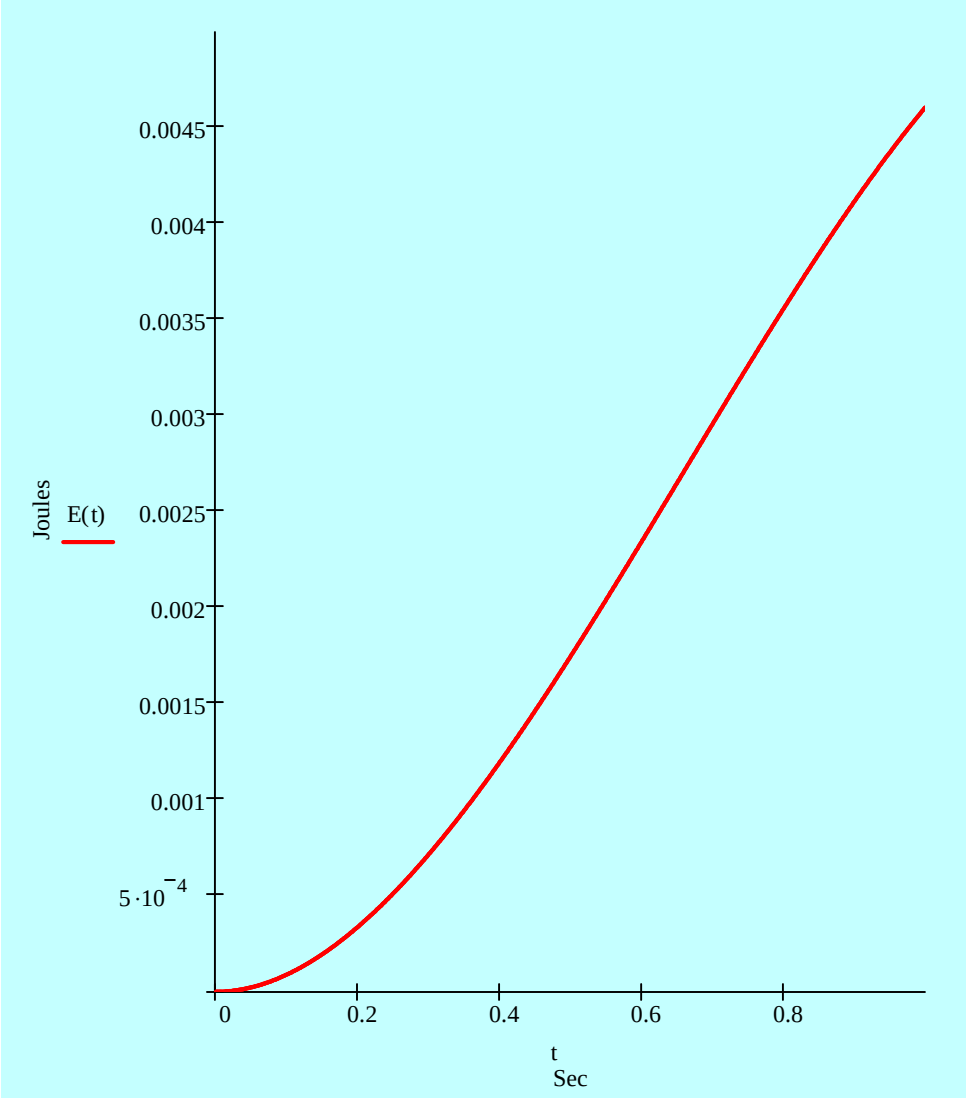

Figure 17. Capacitor energy vs. time

Compute Ideal Mass Change of Capacitor:

$$M(t) := \frac{E(t)}{c^2}$$

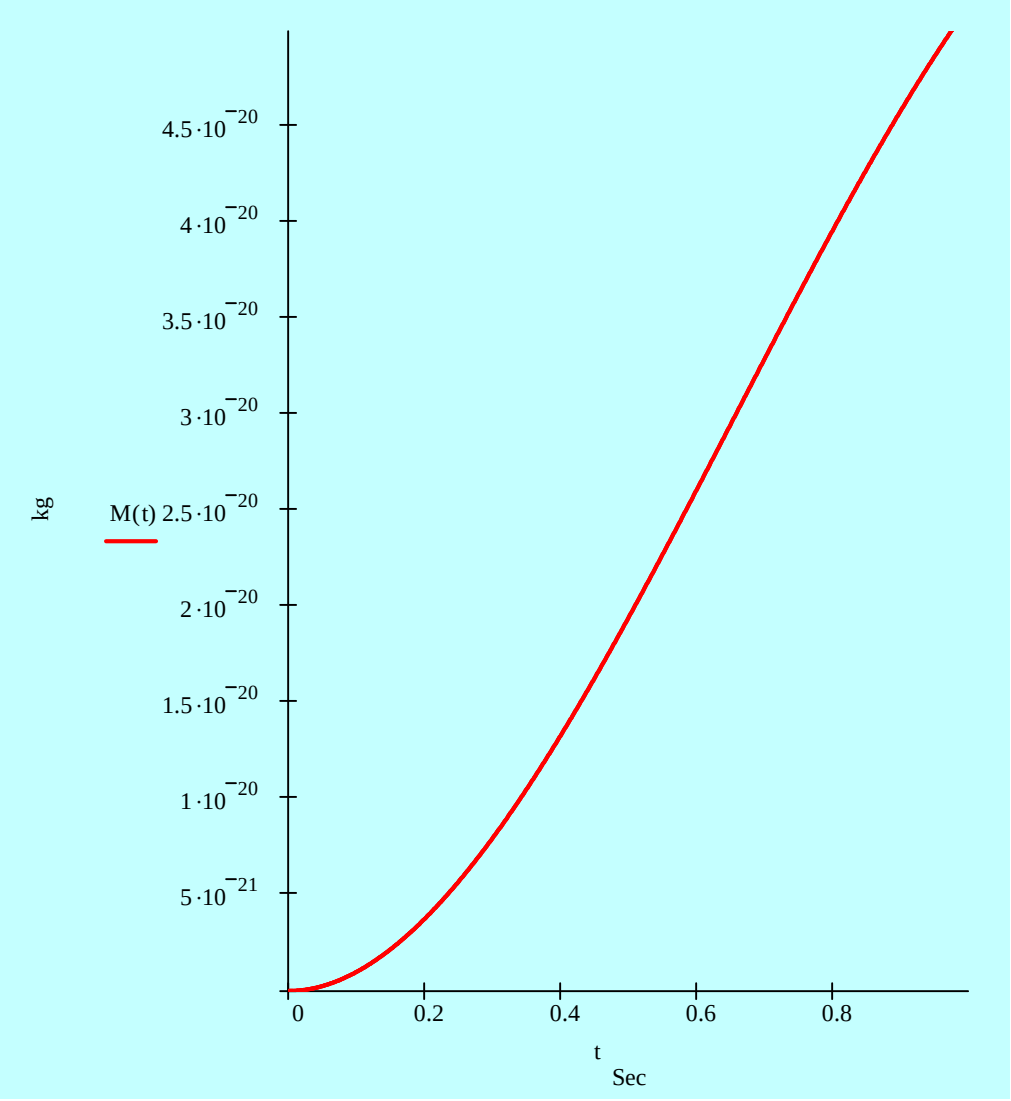

Figure 18. Mass vs. time

Compute Instantaneous Velocity of Capacitor on the Earth:

$$\text{velocity}(t) := g \cdot \frac{C(t)}{CDOT(t)}$$

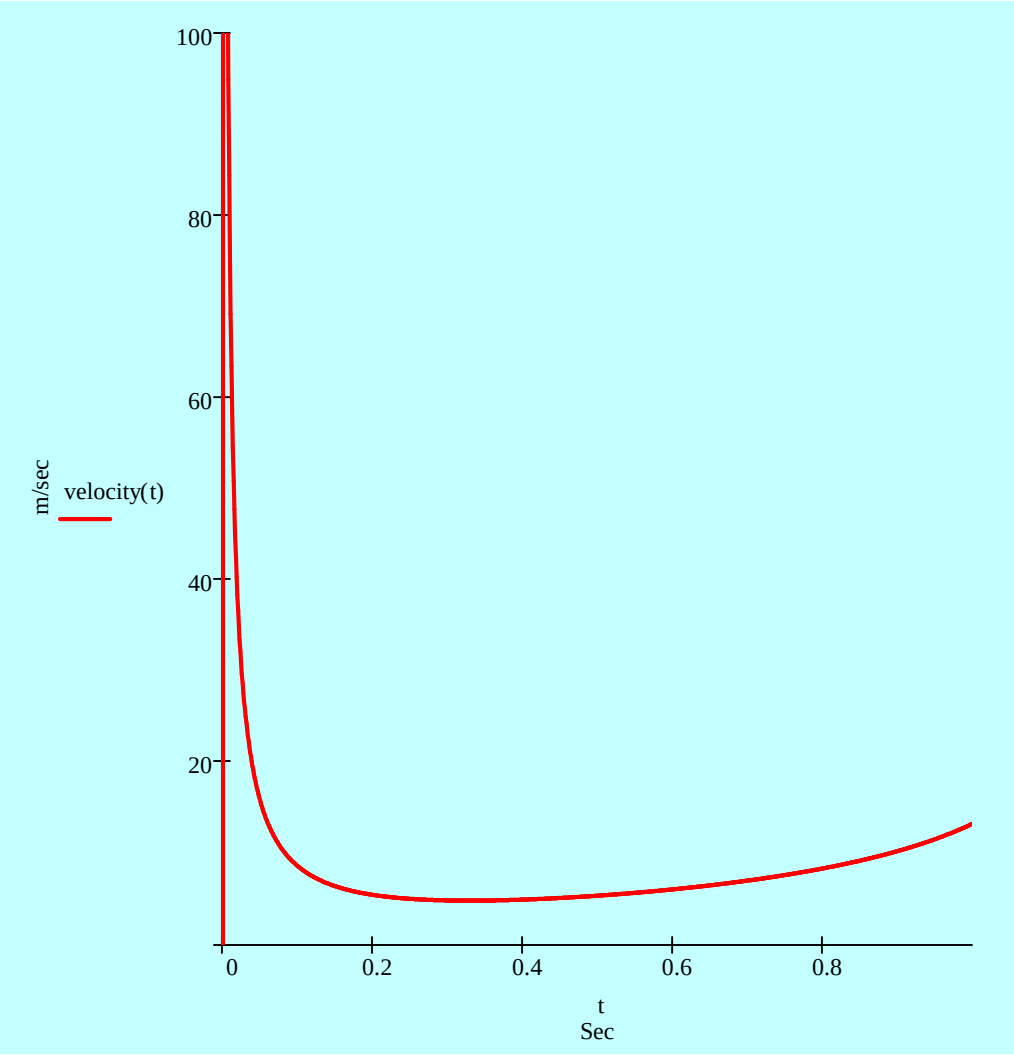

Figure 19. Capacitor velocity vs. time

Compute non-Newtonian Force Produced By Capacitor:

$$F(t) := \text{velocity}(t)\cdot\frac{d}{dt}M(t)$$

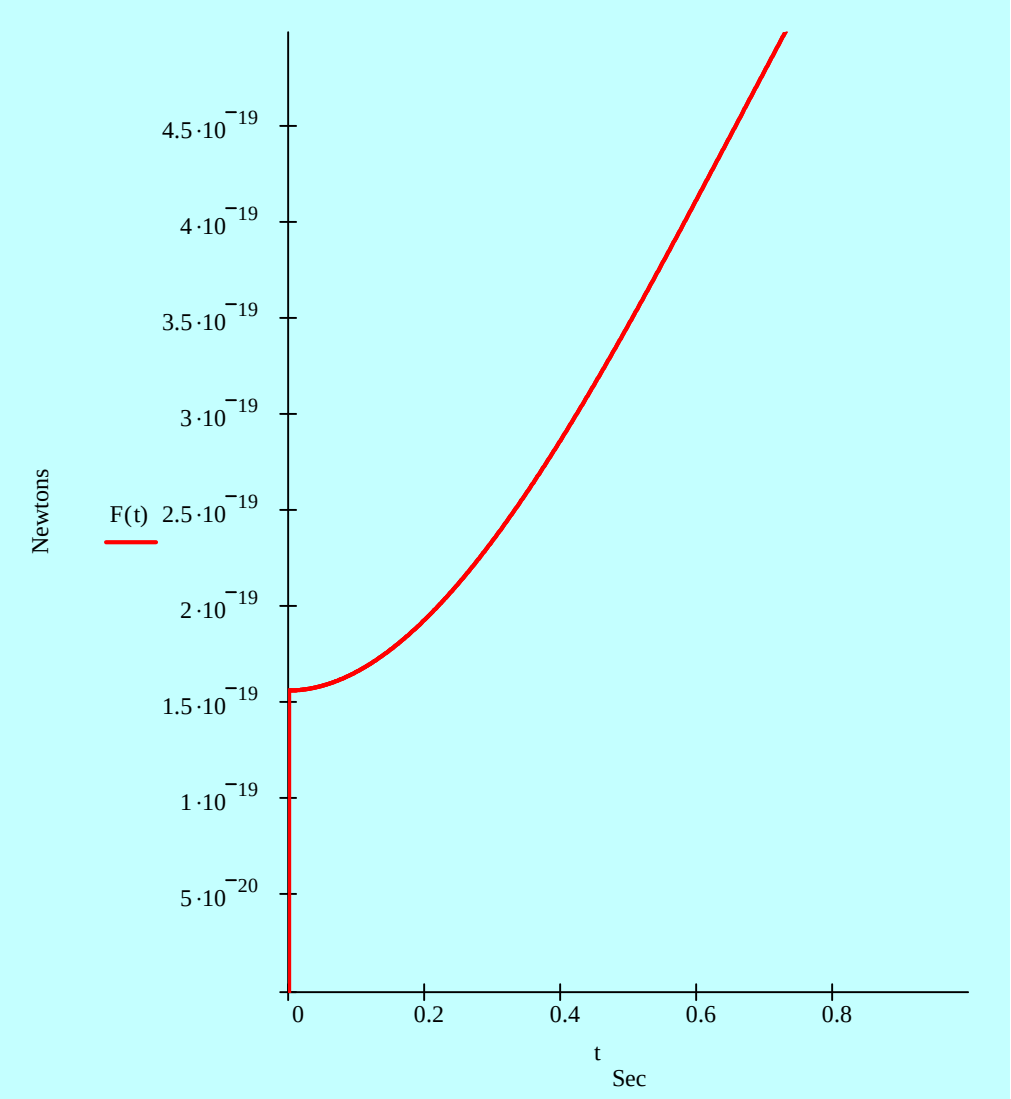

Figure 20. Force vs. time