Tarea #4

Análisis de sistemas lineales

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Con la función de transferencia.

$$\frac{v_0(s)}{v_i(s)} = \frac{s * R}{L * S^2 + R * s + \frac{1}{C}}$$

Valores de los componentes:

L=1µH R=1kΩ y C=1µf

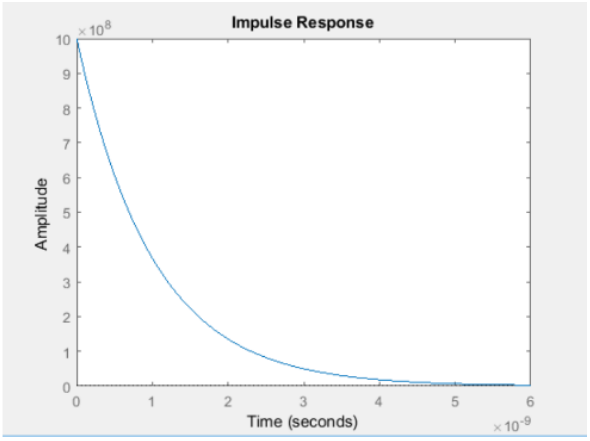
Resistencia

$$\frac{I_{(s)}}{v_{(s)}} = \frac{1}{R + L * s + \frac{1}{C * s}} = \frac{s}{R * s + L * s^2 + \frac{1}{C}}$$

$$\frac{v_L(s)}{V_i(s)} = \frac{s * R}{R * s + L * s^2 + \frac{1}{C}}$$

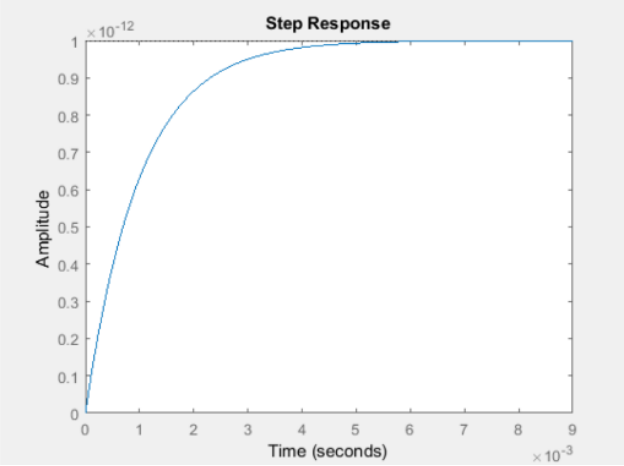
Impulso:

$$V_R = -\frac{1000s}{1x10^{-6} * s^2 + 1000 * s\frac{1}{1x10^{-6}}} * 1$$



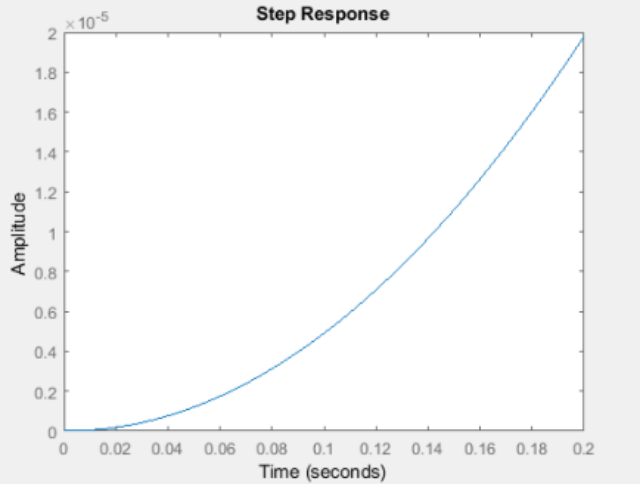
Escalón

$$V_c = \frac{100}{1x10^{-6} * s^2 + 1000 * s + \frac{1}{1x10^{-6}}}$$



Rampa

$$v_c(s) = \frac{1000}{1x10^{-6} * s^3 + 1000 * s^2 + 1x10^6}$$



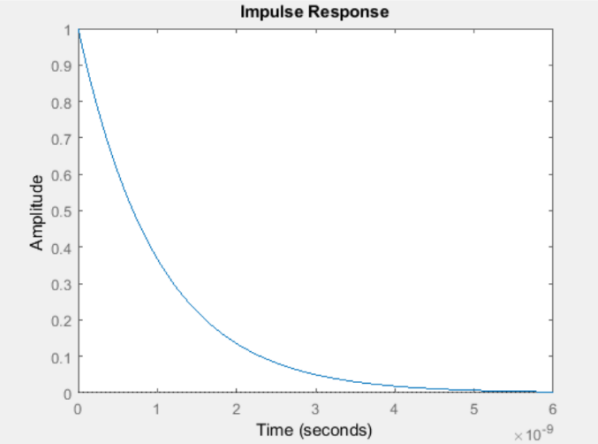
Capacitor:

$$\frac{I_{(s)}}{v_{(s)}} = \frac{1}{R + L * s + \frac{1}{C * s}} = \frac{s}{R * s + L * s^2 + \frac{1}{C}}$$

$$\frac{v_L(s)}{V_i(s)} = \frac{s}{C * R * s^2 + C * L + s^3 + s}$$

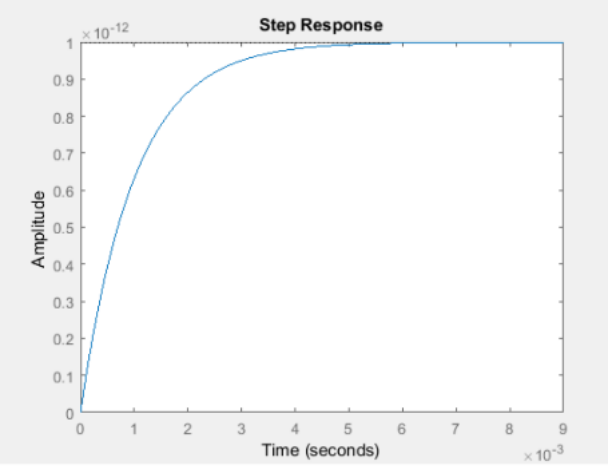
Impulso:

$$V_c(s) = \frac{1x10^{-6} * s}{1x10^{-6} * s^2 + 1000 * s + \frac{1}{1x10^{-6}}} * 1$$



Escalón

$$v_c(s) = \frac{1x10^{-6}}{1x10^{-6} * s^2 + 1000 * s + \frac{1}{1x10^{-6}}} * 1$$



Rampa

$$v_c(s) = \frac{1x10^{-6}}{1x10^{-6} * s^3 + 1000 * s^2 + 1x10^{6} * s}$$