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## **Análisis de sistemas lineales**

Teniendo la siguiente función:

$$\frac{V_{out}(s)}{V_{in}(s)} = \frac{s * R}{L * s^2 + R * s + \frac{1}{C}}$$

Si se conoce los valores de los componentes en el circuito:

L= 1μH

R= 1KΩ

C= 1μf

Se obtiene la siguiente función de transferencia:

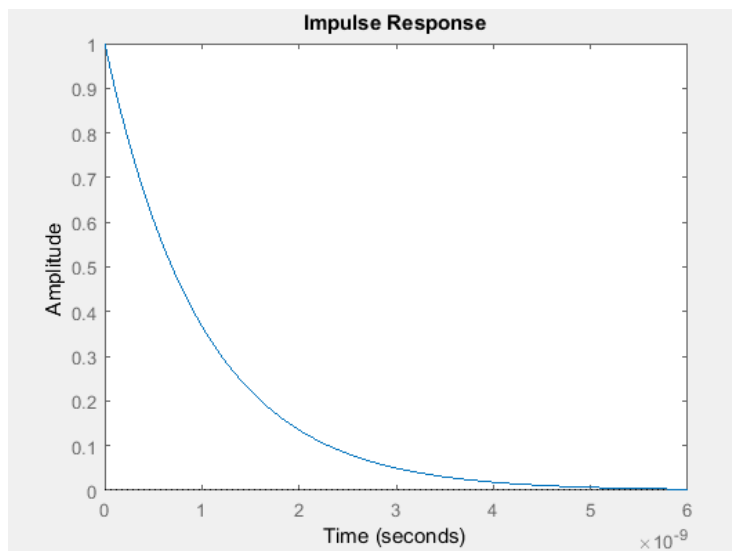
$$V_{out}(s) = \frac{s * R}{L * s^2 + R * s + \frac{1}{C}} * V_{in}(s)$$

$$V_{out}(s) = \frac{1000s}{0.000001 * s^2 + 1000 * s + \frac{1}{0.000001}} * V_{in}(s)$$

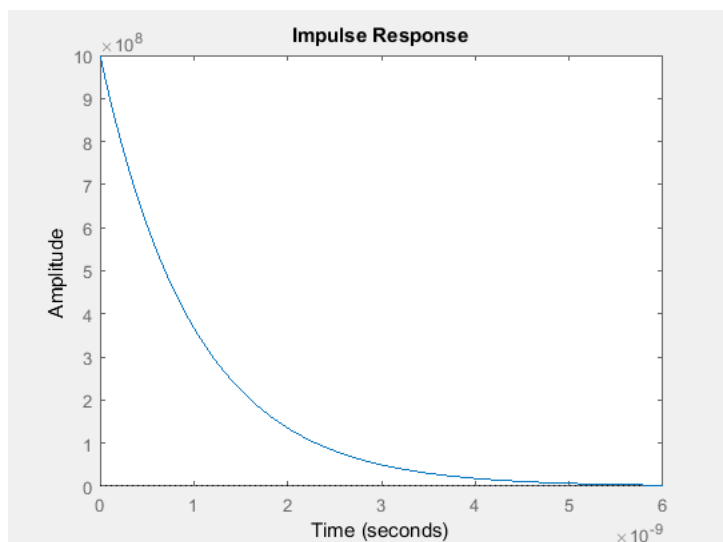
Al realizar las operación se llega a que  $V_C(s) = V_L(s)$

## Para impulso

$$V_C(s) = \frac{0.000001s}{0.000001 * s^2 + 1000 * s + \frac{1}{0.000001}} * 1$$



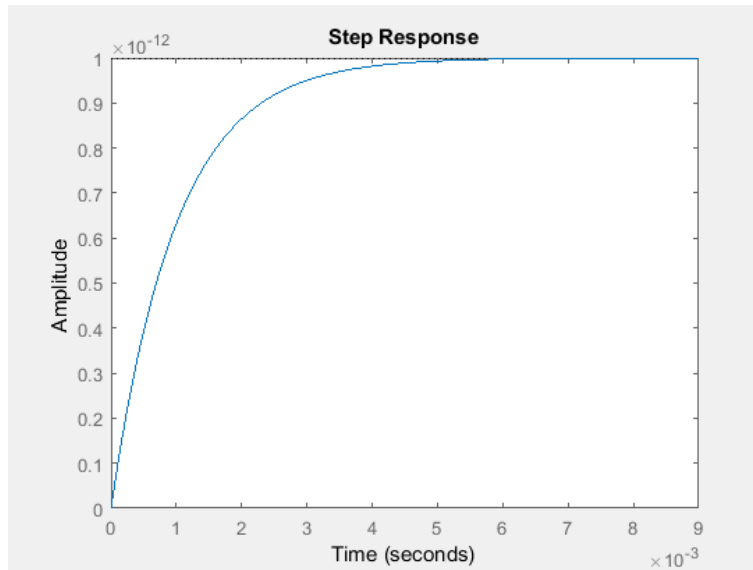
$$V_R(s) = \frac{1000s}{0.000001 * s^2 + 1000 * s + \frac{1}{0.000001}} * 1$$



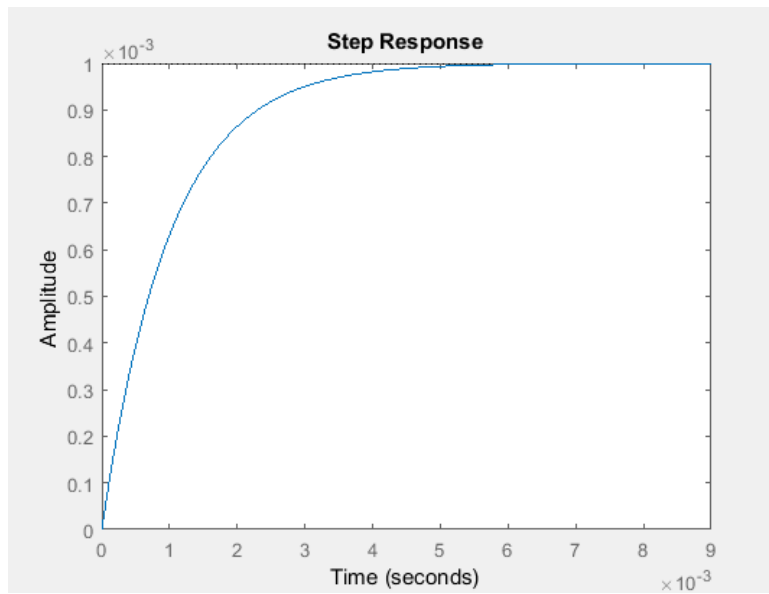
## Para escalón

$$V_C(s) = \frac{0.000001s}{0.000001 * s^2 + 1000 * s + \frac{1}{0.000001}} * \frac{1}{s}$$

$$V_C(s) = \frac{0.000001}{0.000001 * s^2 + 1000 * s + \frac{1}{0.000001}} * 1$$



$$V_R(s) = \frac{1000}{0.000001 * s^2 + 1000 * s + \frac{1}{0.000001}}$$

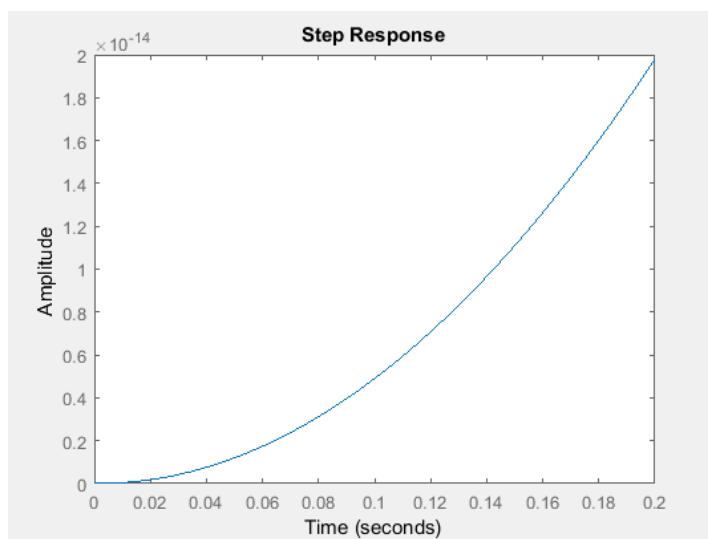


## Para rampa

$$V_C(s) = \frac{0.000001s}{0.000001 * s^2 + 1000 * s + \frac{1}{0.000001}} * \frac{1}{s^2}$$

$$V_C(s) = \frac{0.000001}{0.000001 * s^2 + 1000 * s + \frac{1}{0.000001}} * \frac{1}{s}$$

$$V_C(s) = \frac{0.000001}{0.000001 * s^3 + 1000 * s^2 + 1000000 * s}$$



$$V_R(s) = \frac{1000}{0.000001 * s^3 + 1000 * s^2 + 1000000 * s}$$

