$$v_i(t) = LC \frac{\partial^2}{\partial t^2} v_c(t) + RC \frac{\partial}{\partial t} v_c(t) + v_c(t)$$

$$v_i(t) = a_1 v_1(t) + a_2 v_2(t)$$

$$y(t) = H\{v_i(t)\} = H\{a_1 v_1(t) + a_2 v_2(t)\} = v_c(t)$$

$$\tilde{y}(t) = a_1 y_1(t) + a_2 y_2(t)$$

$$y_1(t) = H\{v_1(t)\}$$

$$v_1(t) = LC \frac{\partial^2 y_1(t)}{\partial t^2} + RC \frac{\partial y_1(t)}{\partial t} + y_1(t)$$

$$y_2(t) = H\{v_2(t)\}$$

$$v_2(t) = LC \frac{\partial^2 y_2(t)}{\partial t^2} + RC \frac{\partial}{\partial t} y_2(t) + y_2(t)$$

$$\tilde{y}(t) = LC\left(a_1 \frac{\partial^2}{\partial t^2} y_1(t) + a_2 \frac{\partial^2}{\partial t^2} y_2(t)\right) + RC\left(a_1 \frac{\partial}{\partial t} y_1(t) + a_2 \frac{\partial}{\partial t} y_2(t)\right) +$$

$$+ a_1 y_1(t) + a_2 y_2(t)$$

$$= a_1\left(LC \frac{\partial^2}{\partial t^2} y_1(t) + RC \frac{\partial}{\partial t} y_1(t) + y_1(t)\right) + a_2\left(LC \frac{\partial^2}{\partial t^2} y_2(t) + RC \frac{\partial}{\partial t} y_2(t) + y_2(t)\right)$$

$$v_i(t) = a_1 v_1(t) + a_2 v_2(t) = LC \frac{\partial^2}{\partial t^2} \tilde{y}(t) + RC \frac{\partial}{\partial t} \tilde{y}(t) + \tilde{y}(t)$$

Entonces:

$$y(t) = H\{v_i(t)\} = \tilde{y}(t) \Rightarrow \text{El sistema es lineal}$$