

$$\hat{y}(k) = -a_2 y(k-1) + b_1 u(k-1)$$

$$\begin{bmatrix} y(2) \\ y(3) \\ \vdots \\ y(N) \end{bmatrix} = \begin{bmatrix} -y(1) & u(1) \\ -y(2) & u(2) \\ \vdots & \vdots \\ -y(N-1) & u(N-1) \end{bmatrix} \begin{bmatrix} a_1 \\ b_1 \end{bmatrix}$$

$Y_{real} = \phi \ominus$

feb 24-07:43 a.m.

$$G(s) = \frac{1/L}{s + R/L} = \frac{I(s)}{V(s)}$$

$V = 1V$

$i(t) = ?$

$I(s) = \frac{1}{s} \cdot \frac{1/L}{s + R/L}$

$A = \frac{1/L}{s + R/L} \Big|_{s=0} = \frac{1/L}{R/L} = \frac{1}{R}$

$B = \frac{1/L}{s} \Big|_{s=-R/L} = \frac{1/L}{-R/L} = -\frac{1}{R}$

$i(t) = \frac{1}{R} - \frac{1}{R} e^{-R/L t}$

$s=0$
 $s+R/L=0$
 $s=-R/L$

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$$I(s) = \frac{1}{s} \cdot \frac{1/L}{s + R/L}$$

$$= \frac{1/L}{s^2 + R/L s}$$

$U(s) \rightarrow g(s) \rightarrow y(s)$

$U(z) \rightarrow G(z) \rightarrow Y(z)$

Z^{-1}

feb 24-09:15 a.m.

$$y(k) = 0.5048 y(k-1) + 0.0476 u(k-1)$$

$Y(z) = 0.5048 z^{-1} Y(z) + 0.0476 z^{-1} U(z)$

$G(z) = \frac{Y(z)}{U(z)} \Rightarrow Y(z) (1 - 0.5048 z^{-1}) = 0.0476 z^{-1} U(z)$

$G(z) = \frac{0.0476 z^{-1}}{1 - 0.5048 z^{-1}} = \frac{0.0476}{z - 0.5048}$

$Y(z) = ?$ Si $U(z)$ es una escalón
 $U(z) = \frac{z}{z-1}$ Si $Y(z) = \frac{Y(z)}{U(z)} \Rightarrow Y(z) = G(z) U(z)$

$Y(z) = \frac{z}{z-1} \cdot \frac{0.0476}{z - 0.5048}$

$\text{Se expande } Y(z) = \frac{0.0476}{(z-1)(z-0.5048)} = \frac{A}{z-1} + \frac{B}{z-0.5048}$

$A = \frac{0.0476}{(1-0.5048)} = 0.5$

$B = \frac{0.0476}{(z-1)z-0.5048} = -0.5$

$Y(z) = \frac{0.5}{z-1} - \frac{0.5}{z-0.5048}$

$y(k) = 0.5 - 0.5(0.5048)^k$

feb 24-10:07 a.m.