

Ejercicio

$$G(p) = \frac{p+3}{p^2+3p+2} * \frac{z(p)}{z(p)}$$

$$Y(p) = p z(p) + 3 z(p)$$

$$U(p) = p^2 z(p) + 3p z(p) + 2 z(p)$$

// $\mathcal{L}^{-1}\{\}$

$$y(t) = z^{(1)} + 3z$$

$$u(t) = z^{(2)} + 3z^{(1)} + 2z$$

Var. de estado

$$\begin{aligned} x_1 &= z \\ x_2 &= z^{(1)} \end{aligned}$$

Ec. de estado

$$\begin{aligned} \dot{x}_1 &= z^{(1)} = x_2 \\ \dot{x}_2 &= z^{(2)} = u(t) - 3z^{(1)} - 2z \end{aligned}$$

$$u(t) - 3x_2 - 2x_1$$

Ec. de salida

$$y(t) = z'' + 3z \rightarrow \dot{x}_2 + 3x_1$$

$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \end{bmatrix} = \begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u$$

$$y = \begin{bmatrix} 3 & 1 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + \begin{bmatrix} 0 \end{bmatrix} u$$

