Esercizi

Michele Leigheb

Contents

1 Complessi

- $2^{(a+ib)} = 2^a(\cos(b\ln(2)) + i\sin(b\ln(2)))$
- $3^{(a+ib)} = 3^a(\cos(b\ln(3)) + i\sin(b\ln(3)))$
- $e^{(a+ib)} = e^a(\cos(b)) + i\sin(b)$
- $\alpha^{(a+ib)} = e^\alpha(\cos(b)\ln(\alpha)) + i\sin(b\ln(\alpha))$

2 Esercizi

$$W(s) = \frac{\begin{pmatrix} s & 0 & 1 \\ 1 & s+1 & 0 \end{pmatrix}}{s^2+1}$$

2.0.1 Forma Canonica Raggiungibile

Con la realizzazione cano ragg viene

$$A = \begin{pmatrix} 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 \\ -1 & 0 & 0 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 & 0 & 0 \\ 0 & 0 & -1 & 0 & 0 & 0 \end{pmatrix}, B = \begin{pmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}, C = \begin{pmatrix} 0 & 0 & 1 & 1 & 0 & 0 \\ 1 & 1 & 0 & 0 & 1 & 0 \end{pmatrix}$$

$$W(s) = \begin{pmatrix} -\frac{s}{-s^2-1} & 0 & -\frac{1}{-s^2-1} \\ -\frac{1}{-s^2-1} & -\frac{s}{-s^2-1} - \frac{1}{-s^2-1} & 0 \end{pmatrix}$$

2.0.2 Forma Canonica Osservabile

Con la realizzazione cano oss viene

$$A = \begin{pmatrix} 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & -1 \\ 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \end{pmatrix}, B = \begin{pmatrix} 0 & 0 & 1 \\ 1 & 1 & 0 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \end{pmatrix}, C = \begin{pmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

$$W(s) = \begin{pmatrix} -\frac{s}{-s^2-1} & 0 & -\frac{1}{-s^2-1} \\ -\frac{1}{-s^2-1} & -\frac{s}{-s^2-1} - \frac{1}{-s^2-1} & 0 \end{pmatrix}$$