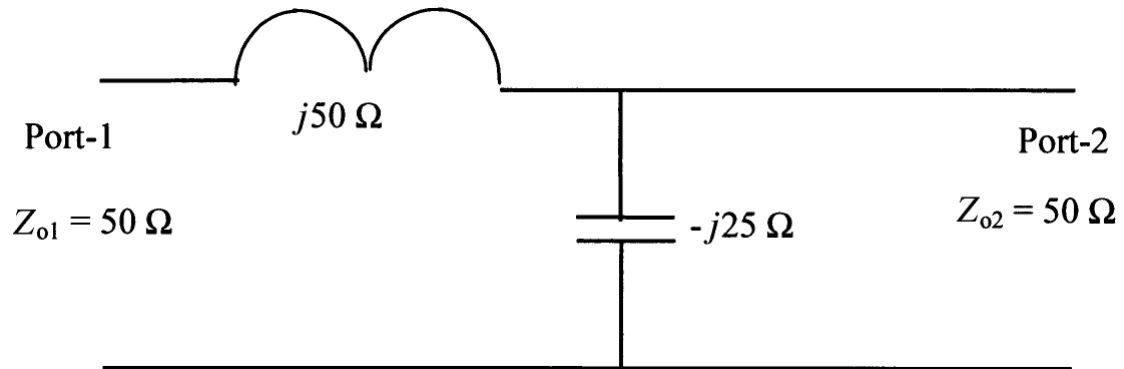


Determine os parâmetros S do 2-port network mostrado abaixo. Z_{o1} e Z_{o2} são as impedâncias “vistas” respectivamente à esquerda do port 1 e à direita do port 2.



Dica: Usar as tabelas nos slides 24 e 25 do Cap III das notas de aula.

Respostas:

$$|S_{11}| = 0.745 \quad \arg(S_{11}) = 116.565\text{-deg}$$

$$|S_{12}| = 0.667 \quad \arg(S_{12}) = -90\text{-deg}$$

$$|S_{21}| = 0.667 \quad \arg(S_{21}) = -90\text{-deg}$$

$$|S_{22}| = 0.745 \quad \arg(S_{22}) = -116.565\text{-deg}$$

Respostas:

Impedância dos *ports*:

$$Z_0 := 50 \cdot \Omega$$

Da tabela do slide 24 do Cap III das notas de aula:

$$Z_1 := j \cdot 50 \cdot \Omega$$

$$Z_2 := 0 \cdot \Omega$$

$$Z_3 := -j \cdot 25 \cdot \Omega$$

$$\underline{\underline{A}} := 1 + \frac{Z_1}{Z_3} \quad B := Z_1 + Z_2 + \frac{Z_1 \cdot Z_2}{Z_3}$$

$$\underline{\underline{C}} := \frac{1}{Z_3} \quad D := 1 + \frac{Z_2}{Z_3}$$

Da Tabela 4.2 do slide 25 do Cap III das notas de aula:

$$S_{11} := \frac{A + \frac{B}{Z_0} - C \cdot Z_0 - D}{A + \frac{B}{Z_0} + C \cdot Z_0 + D} \quad |S_{11}| = 0.745 \quad \arg(S_{11}) = 116.565 \text{ deg}$$
$$S_{11} = -0.333 + 0.667i$$

$$S_{12} := \frac{2 \cdot (A \cdot D - B \cdot C)}{A + \frac{B}{Z_0} + C \cdot Z_0 + D} \quad |S_{12}| = 0.667 \quad \arg(S_{12}) = -90 \text{ deg}$$
$$S_{12} = -0.667i$$

$$S_{21} := \frac{2}{A + \frac{B}{Z_0} + C \cdot Z_0 + D} \quad |S_{21}| = 0.667 \quad \arg(S_{21}) = -90 \text{ deg}$$
$$S_{21} = -0.667i$$

$$S_{22} := \frac{-A + \frac{B}{Z_0} - C \cdot Z_0 + D}{A + \frac{B}{Z_0} + C \cdot Z_0 + D} \quad |S_{22}| = 0.745 \quad \arg(S_{22}) = -116.565 \text{ deg}$$
$$S_{22} = -0.333 - 0.667i$$