



# QUESTIONÁRIO 1

5)

$$A = \begin{bmatrix} 6 & 7 & 0 \\ 0 & 0 & 4 \\ -7 & -4 & 6 \end{bmatrix}$$

$$B = \begin{bmatrix} 9 & 0 & 2 \\ 7 & 1 & 0 \\ -2 & 7 & 9 \end{bmatrix}$$

$$A+B = \begin{bmatrix} 6+9 & 7+0 & 0+2 \\ 7+0 & 1+0 & 4+0 \\ -7+(-2) & -4+7 & 6+9 \end{bmatrix} = \begin{bmatrix} 15 & 7 & 2 \\ 7 & 1 & 4 \\ -9 & 3 & 15 \end{bmatrix}$$

$$D_{\text{actual}} = 15 + 1 + 15 = 31$$

$$2) A = \begin{bmatrix} 0 & 5 & 0 \\ 0 & 0 & 7 \\ -5 & -7 & -2 \end{bmatrix} \rightarrow 2A = \begin{bmatrix} 0 & 10 & 0 \\ 0 & 0 & 14 \\ -10 & -14 & -4 \end{bmatrix}$$

$$B = \begin{bmatrix} 10 & 0 & 7 \\ 2 & 1 & 0 \\ -7 & 2 & 10 \end{bmatrix}$$

$$2A - B = \begin{bmatrix} -10 & 10 & -7 \\ -2 & -1 & 14 \\ -3 & -16 & -4 \end{bmatrix}$$

$$= \begin{bmatrix} -6 & 10 & -7 \\ -2 & -1 & 14 \\ -3 & -16 & -4 \end{bmatrix}$$

$$\rightarrow -6 + (-2) + (-3) = -6 - 2 - 3 = -11$$

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$$3) \quad C = \begin{bmatrix} 5 & 9 & 0 \\ -2 & 0 & 2 \end{bmatrix}$$

$$D = \begin{bmatrix} -9 & 9 \\ 2 & 0 \\ 9 & 5 \end{bmatrix}$$

$$C \cdot D = \begin{bmatrix} 5 & 9 & 0 \\ -2 & 0 & 2 \end{bmatrix} \cdot \begin{bmatrix} -9 & 9 \\ 2 & 0 \\ 9 & 5 \end{bmatrix}$$

$$= \begin{bmatrix} -45 + 18 + 0 & 45 + 0 + 0 \\ 12 + 0 + 18 & -12 + 0 + 10 \end{bmatrix}$$

$$= \begin{bmatrix} -27 & 45 \\ 30 & -2 \end{bmatrix}$$

$$C \cdot D = -27 + 45 + 30 + 0 = 46$$

$$= \begin{bmatrix} -45+18+0 & 45+0+0 \\ 18+0+18 & -9+0+10 \end{bmatrix}$$

$$= \begin{bmatrix} -27 & 45 \\ 36 & -8 \end{bmatrix}$$

Soma G.E. =  $-27 + 49 + 36 - 8 = 46$

$$\begin{bmatrix} 5 & -5 & 0 & 1 & 0 & 0 \\ 0 & 5 & 0 & 0 & 1 & 0 \\ 6 & 6 & 1 & 0 & 0 & 1 \end{bmatrix}$$

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$$\begin{array}{ccc|ccc} 1 & 0 & 0 & \frac{1}{3} & \frac{1}{3} & 0 \\ 0 & 1 & 0 & 0 & \frac{1}{3} & 0 \\ 6 & 6 & 1 & 0 & 0 & 1 \end{array} \quad \begin{array}{l} L_1 \cdot \frac{1}{3} \\ L_2 \cdot \frac{1}{3} \end{array}$$

$$\begin{array}{ccc|ccc} 1 & 0 & 0 & \frac{1}{3} & \frac{1}{3} & 0 \\ 0 & 1 & 0 & 0 & \frac{1}{3} & 0 \\ 0 & 6 & 1 & \frac{1}{3} & \frac{1}{3} & 1 \end{array} \quad \begin{array}{l} \\ \\ L_3 - 6L_1 \end{array}$$

$$\begin{array}{ccc|ccc} 1 & 0 & 0 & \frac{1}{3} & \frac{1}{3} & 0 \\ 0 & 1 & 0 & 0 & \frac{1}{3} & 0 \\ 0 & 0 & 1 & \frac{1}{3} & \frac{1}{3} & 1 \end{array} \quad \begin{array}{l} \\ \\ L_3 - 6L_2 \end{array} \quad B = \begin{array}{ccc} 1 & 1 & 0 \\ \frac{1}{3} & \frac{1}{3} & 0 \\ \frac{1}{3} & \frac{1}{3} & 1 \end{array}$$

$$5) A = \begin{bmatrix} 5 & -5 & 0 \\ 0 & 5 & 0 \\ 6 & 6 & 1 \end{bmatrix}$$

$$\lambda_{\text{max}} = -13$$

$$6) \text{TRACO} = \frac{1}{5} + \frac{1}{5} + 1 = \frac{1}{5} + \frac{1}{5} + \frac{5}{5} = \frac{7}{5} = 1,40$$