QUESTIONÁRIO 2

1)

$$A = \begin{bmatrix} 8 & 0 & 0 & 7 \\ 10 & 7 & 0 & 0 \\ 0 & 0 & 10 & -6 \\ 0 & 8 & 7 & 0 \end{bmatrix} \qquad \tilde{A} = \begin{bmatrix} 294 & -420 & 480 & 800 \\ & 336 & & \\ & & & -392 \\ -490 & & & \end{bmatrix}$$

det (A) = Soma do produto dos elementos de uma linha da matriz pelo seus cofatores

$\tilde{a}_{ij} = (-1)^{i+j} \cdot \det \tilde{A}_{ij}$

$\tilde{a}_{11} = 1 \cdot \det \begin{bmatrix} 7 & 0 & 0 \\ 0 & 10 & -6 \\ 8 & 7 & 0 \end{bmatrix}$

$= 1 \cdot (0 + 0 + 0 - 0 - 0 = 294$

$\tilde{a}_{12} = -1 \cdot \det \begin{bmatrix} 10 & 0 & 0 \\ 0 & 10 & -6 \\ 0 & 7 & 0 \end{bmatrix}$

$= -1 \cdot (0 + 0 + 0 - 0 - 0 + 420) = -420$

$\tilde{a}_{13} = 1 \cdot \det \begin{bmatrix} 10 & 7 & 0 \\ 0 & 0 & -6 \\ 0 & 8 & 0 \end{bmatrix}$

$= 1 \cdot (0 + 0 + 0 - 0 - 0 + 480) = 480$

$\tilde{a}_{14} = -1 \cdot \det \begin{bmatrix} 10 & 7 & 0 \\ 0 & 0 & 10 \\ 0 & 8 & 7 \end{bmatrix}$

$= -1 \cdot (0 + 0 + 0 - 0 - 0 - 200) = 200$

$det(A) = a_{1,1} \cdot \tilde{a}_{1,1} + a_{1,2} \cdot \tilde{a}_{1,2} + a_{1,3} \cdot \tilde{a}_{1,3} + a_{1,4} \cdot \tilde{a}_{1,4}$

$= 8 \cdot 294 + 0 \cdot 420 + 0 \cdot 480 + 7 \cdot 200$

$= 2352 + 5600 = 7952$

2)

$$A = \begin{bmatrix} 8 & 0 & 0 & 7 \\ 10 & 7 & 0 & 0 \\ 0 & 0 & 10 & -6 \\ 0 & 8 & 7 & 0 \end{bmatrix}$$

$\tilde{A}_{22} = (-1)^{4} \cdot det \begin{bmatrix} 8 & 0 & 7 \\ 0 & 10 & -6 \\ 0 & 7 & 0 \end{bmatrix}$

$= 1 \cdot (0 + 0 + 0 - 0 - 0 + 336) = 336$

3)

$$A = \begin{bmatrix} 8 & 0 & 0 & 7 \\ 10 & 7 & 0 & 0 \\ 0 & 0 & 10 & -6 \\ 0 & 8 & 7 & 0 \end{bmatrix}$$

$\tilde{A}_{34} = -490 - 392 = -882$

$\tilde{A}_{41} = -1 \cdot det \begin{bmatrix} 0 & 0 & 7 \\ 7 & 0 & 0 \\ 0 & 10 & -6 \end{bmatrix}$

$-1 \cdot (0 + 0 + 490 - 0 - 0 - 0) = -490$

$\tilde{A}_{44} = -1 \cdot det \begin{bmatrix} 8 & 0 & 0 \\ 10 & 7 & 0 \\ 0 & 8 & 7 \end{bmatrix}$

$-1 \cdot (392 + 0 + 0 - 0 - 0 - 0) = -392$

Anexo - Banca

$\det(A) = 8,5$

$\det(B) = 7,6$

$\det(A^2 \cdot B^{-1}) + \det(3 \cdot A^6)$

Sabendo que $\det A^6 = \det A$

e que $\det(A \cdot B) = \det A \cdot \det B$

e $\det(A^{-1}) = \det(A)^{-1}$

$\det(A \cdot A \cdot B^{-1}) + 3 \cdot \det(A^2)$

$\det A \cdot \det A \cdot \det(B^{-1}) + 3 \cdot \det A$

$\det A \cdot \det A \cdot \det(B)^{-1} + 3 \cdot \det A$

$25 \cdot 8,5 \cdot \frac{1}{7,6} + 3 \cdot 8,5$

$9,5066 + 25,5$

$35,01$