14ª LISTA DE EXERCÍCIOS

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1. Determine os menores complementares e complementos algébricos do cada elemento das matrizes abaixo:

   (a) $A = \begin{bmatrix} 5 & 6 \\ 4 & 5 \end{bmatrix}$

   (b) $B = \begin{bmatrix} 2 & 5 \\ 1 & 3 \end{bmatrix}$

   (c) $C = \begin{bmatrix} 1 & 0 \\ 0 & 2 \end{bmatrix}$

   (d) $D = \begin{bmatrix} 1 & -1 \\ 1 & 1 \end{bmatrix}$

   (e) $E = \begin{bmatrix} 1 & 1 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$

   (f) $F = \begin{bmatrix} 1 & 0 & 1 \\ 1 & 2 & 3 \\ 1 & 2 & 4 \end{bmatrix}$

   (g) $G = \begin{bmatrix} 1 & 9 & 5 \\ 3 & 1 & 2 \\ 6 & 4 & 4 \end{bmatrix}$

2. Seja $M = \begin{bmatrix} 2 & 4 & 3 \\ 5 & 2 & 1 \\ -1 & 7 & -1 \end{bmatrix}$.

   Calcule D_{21}, D_{22} e D_{23}.

3. Encontre o cofator de 3 na matriz $M = \begin{bmatrix} 2 & 4 & 1 & 0 \\ 6 & -2 & 5 & 7 \\ -1 & 7 & 2 & 4 \\ 0 & 3 & -1 & -10 \end{bmatrix}$.

4. Seja $M = \begin{bmatrix} 1 & -1 & 0 & 0 \\ 0 & 2 & -2 & 1 \\ 3 & 3 & 4 & 1 \\ 4 & 5 & 7 & 6 \end{bmatrix}$.

   Calcule D_{13}, D_{24}, D_{32} e D_{43}.

5. Seja $M = \begin{bmatrix} 1 & 0 & 2 & 0 \\ 1 & -3 & 4 & 0 \\ 5 & 2 & -1 & 2 \\ -2 & 2 & 0 & 3 \end{bmatrix}$.

   Calcule D_{11}, D_{22}, D_{33} e D_{44}.

6. Determine a inversa de cada matriz abaixo:

   (a) $A = \begin{bmatrix} 5 & 6 \\ 4 & 5 \end{bmatrix}$

   (b) $B = \begin{bmatrix} 2 & 5 \\ 1 & 3 \end{bmatrix}$

   (c) $C = \begin{bmatrix} 1 & 0 \\ 0 & 2 \end{bmatrix}$

   (d) $D = \begin{bmatrix} 1 & -1 \\ 1 & 1 \end{bmatrix}$

   (e) $E = \begin{bmatrix} 1 & 1 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$

   (f) $F = \begin{bmatrix} 1 & 0 & 1 \\ 1 & 2 & 3 \\ 1 & 2 & 4 \end{bmatrix}$

   (g) $G = \begin{bmatrix} 1 & 9 & 5 \\ 3 & 1 & 2 \\ 6 & 4 & 4 \end{bmatrix}$

7. Calcule os determinantes das matrizes abaixo utilizando o teorema de Laplace.

   (a) $M = \begin{bmatrix} 3 & 4 & 2 & 1 \\ 5 & 0 & -1 & -2 \\ 0 & 0 & 4 & 0 \\ -1 & 0 & 3 & 3 \end{bmatrix}$

   (b) $M = \begin{bmatrix} 0 & a & b & 1 \\ 0 & 1 & 0 & 0 \\ a & a & 0 & b \\ 1 & b & a & 0 \end{bmatrix}$

   (c) $M = \begin{bmatrix} 1 & 3 & 2 & 0 \\ 3 & 1 & 0 & 2 \\ 2 & 3 & 0 & 1 \\ 0 & 2 & 1 & 3 \end{bmatrix}$

   (d) $M = \begin{bmatrix} 1 & 2 & 3 & 4 & 5 \\ 0 & a & -1 & 3 & 1 \\ 0 & 0 & b & 2 & 3 \\ 0 & 0 & 0 & c & 2 \\ 0 & 0 & 0 & 0 & d \end{bmatrix}$

   (e) $M = \begin{bmatrix} x & 0 & 0 & 0 & 0 & 0 \\ a & y & 0 & 0 & 0 & 0 \\ l & p & z & 0 & 0 & 0 \\ m & n & p & x & 0 & 0 \\ a & b & c & d & e & z \end{bmatrix}$