UNIVERSIDADE FEDERAL DO CEARÁ
CAMPUS MUCAMBINHO – SOBRAL
ALGEBRA LINEAR

Nome:____ Data: __ / __ / ____

Matrícula:____________

1. (1 pts) Ache *x*, *y*, *z* e *w*, se:

$$a)\ \begin{vmatrix} x & y \\ z & w \end{vmatrix} = \begin{vmatrix} 6 & -8 \\ 4 & 1 \end{vmatrix} \begin{vmatrix} -7 & 2 \\ -3 & 4 \end{vmatrix}$$

$$b)\ \begin{vmatrix} x & y \\ z & w \end{vmatrix} = \begin{vmatrix} -7 & 2 \\ -3 & 4 \end{vmatrix} \begin{vmatrix} 6 & -8 \\ 4 & 1 \end{vmatrix}$$

2. (2 pts) Determine o posto, a nulidade e encontre todas as soluções dos sistemas:

a) $$\begin{cases} x_1 + 3x_2 + 2x_3 + 3x_4 - 7x_5 = 14 \\ x_1 + 3x_2 - x_3 + 2x_5 = -1 \\ 2x_1 + 6x_2 + x_3 - 2x_4 + 5x_5 = -2 \\ 4x_1 + 12x_2 - 4x_3 + 8x_5 = -4 \\ 4x_1 + 12x_2 + 2x_3 - 4x_4 + 10x_5 = -4 \end{cases}$$

b) $x_1 + 2x_2 - x_3 + 3x_4 = 1$

3. (2 pts) Calcule o det(**AB**) para:

a) $$\mathbf{A} = \begin{vmatrix} 4 & -9 & -4 & 7 \\ 8 & 8 & 7 & 8 \\ 5 & -3 & -2 & 1 \end{vmatrix}, \quad \mathbf{B} = \begin{vmatrix} 1 & 3 & -4 \\ 4 & -5 & 8 \\ 7 & 1 & 1 \\ 1 & 4 & -2 \end{vmatrix}$$

b) $$\mathbf{A} = \begin{vmatrix} 1 & 7 & -2 & 5 \\ -1 & 8 & 2 & -1 \\ 2 & 0 & -4 & -7 \\ -1 & 3 & 2 & 11 \end{vmatrix}, \quad \mathbf{B} = \begin{vmatrix} 4 & 1 & 5 & 10 \\ 3 & -2 & 1 & 2 \\ -7 & -1 & -8 & -16 \\ 2 & 3 & 5 & 10 \end{vmatrix}$$

4. (2 pts) Resolva os sistemas pela Regra de Cramer:

$$a)\ \begin{cases} 2x - 3y + 7z = 1 \\ x + 3z = 5 \\ 2y - z = 0 \end{cases}$$

$$b) \begin{cases} x + 2y + z = 0 \\ -x + 3z = 5 \\ x - 2y + z = 1 \end{cases}$$

5. (2 pts) Encontre as matrizes inversas:

$$\mathbf{A} = \begin{vmatrix} 2 & 1 & 0 & 0 \\ 1 & 0 & -1 & 1 \\ 0 & 1 & 1 & 1 \\ -1 & 0 & 0 & 3 \end{vmatrix}, \quad \mathbf{B} = \begin{vmatrix} -7 & 2 & 0 & 4 & 4 & 1 \\ 1 & 0 & -1 & 1 & 0 & -1 \\ 1 & 0 & -3 & 0 & 1 & 1 \\ 0 & 0 & 3 & 11 & -6 & 6 \\ 1 & 0 & -1 & 1 & 0 & -1 \\ 0 & 0 & 8 & -1 & 2 & 1 \end{vmatrix}$$

6. (1 pts) : Encontre det(**A**):

$$\mathbf{A} = \begin{vmatrix} 1 & 5 & -2 & 1 & 2 \\ 3 & 0 & 2 & 1 & 2 \\ 1 & -2 & -3 & 0 & 2 \\ 1 & 2 & 2 & -3 & 0 \\ 0 & -1 & 3 & -1 & -1 \end{vmatrix}$$