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Tarefa Básica

01. (UESP1) - Se o determinante da matriz $\begin{pmatrix} P & 2 & 2 \\ P & 4 & 4 \\ P & 4 & 1 \end{pmatrix}$ é igual a -18, então o determinante de $\begin{pmatrix} P-1 & 2 \\ P-2 & 4 \\ P-2 & 1 \end{pmatrix}$ é

$$\begin{vmatrix} P-2 & 2 \\ P-4 & 4 \\ P-4 & 1 \end{vmatrix} = P^3 \cdot \begin{vmatrix} 2 & 2 \\ 4 & 4 \\ 4 & 1 \end{vmatrix} = -18 \quad 20P - 26P = -6P$$

$$\downarrow \quad \begin{array}{l} 8p + 16p + 2p = 26p \\ 4p + 8p + 8p = 20p \\ -32 - 24 - 3 = -39 \end{array} \quad \begin{array}{l} -6p = -18 \\ p = \frac{-18}{-6} \\ p = 3 \end{array}$$

$$\begin{array}{c} \begin{vmatrix} 3 & -1 & 2 & 3 \\ 3 & -2 & 4 & 3 \\ 3 & -2 & 1 & 3 \end{vmatrix} = -30 - (-39) = -30 + 39 \\ \hline \begin{vmatrix} -6 & -12 & -12 & -30 \end{vmatrix} = 3 // \Rightarrow \text{Letra E.} \end{array}$$

02. (MACK) - A é uma matriz quadrada de ordem 4 e $\det A = -6$.
O valor de x tal que $\det(2A) = X - 97$ é

$$\begin{aligned} |(2A)| &= 2^x = 2^4 & 2^4 \cdot (-6) &= X - 97 \\ 16 \cdot (-6) &= X - 97 \\ -96 + 97 &= X \\ \boxed{1} &= X \Rightarrow \text{Letra C.} \end{aligned}$$

03. (CESGRANRIO)

$$Y = \begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix} = X \cdot \begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix} \quad \begin{array}{l} a_{31} \times a_{32} \div a_{33} \div X \\ // \end{array}$$

$$\frac{x}{y} = \begin{bmatrix} A_{11} : y & A_{12} & A_{13} \\ A_{21} : y & A_{22} & A_{23} \\ A_{31} : x/y & A_{32} : x & A_{33} : x \end{bmatrix}$$

\rightarrow Alternativa (C) //

04. (UESP) - Se o determinante da matriz $a \otimes b$, então o determinante da matriz $\begin{pmatrix} 2 & 1 & 0 \\ K & K & K \\ 1 & 2 & -2 \end{pmatrix}$ é igual

$$\begin{pmatrix} 2 & 1 & 0 \\ K+4 & K+3 & K-1 \\ 1 & 2 & -2 \end{pmatrix} \text{ é igual a:}$$

$$0+9K-2K=7K$$

$$\left| \begin{array}{ccc|cc} 2 & 1 & 0 & 2 & 1 \\ K & K & K & K & K \\ 1 & 2 & -2 & 1 & 2 \end{array} \right| \quad K'K = -3K - 2K = -5K = 10$$

$$-4K + K + 0 = -3K.$$

$$\begin{aligned} K &= 10 \\ -5 \\ K &= -2K \end{aligned}$$

$$\left| \begin{array}{ccc|cc} 2 & 1 & 0 & 2 & 1 \\ -2+4 & -2+3 & -2-1 & 2 & 1 \\ 1 & 2 & -2 & 1 & 2 \end{array} \right| = \left| \begin{array}{ccc|cc} 2 & 1 & 0 & 2 & 1 \\ 2 & 1 & -3 & 2 & 1 \\ 1 & 2 & -2 & 1 & 2 \end{array} \right|$$

$$0-12-4=-16$$

$$\left| \begin{array}{ccc|cc} 2 & 1 & 0 & 2 & 1 \\ 2 & 1 & -3 & 2 & 1 \\ 1 & 2 & -2 & 1 & 2 \end{array} \right| = -7 - (-16) = -7 + 16 = 9 //$$

$$-4-3+0=-7$$

R: Alternativa (D) //

06. Resolva a Equação:

$$\begin{vmatrix} 1 & x & x^2 \\ 1 & 2 & 4 \\ 1 & -3 & 9 \end{vmatrix} = 0 \quad \begin{array}{c} 2x^2 - 12 + 9x \\ | \quad | \\ 1 \ x \ x^2 \\ | \quad | \\ 1 \ 2 \ 4 \\ | \quad | \\ 1 \ -3 \ 9 \end{array}$$

$$= -3x^2 + 4x + 18 - (-2x^2 + 12 - 9x)$$

$$-5x^2 - 5x + 30 = 0$$

$$\Delta = b^2 - 4.a.c$$

$$\Delta = (-5)^2 - 4.(-5).30$$

$$\Delta = 25 + 600$$

$$\Delta = 625$$

$$x = \frac{-b \pm \sqrt{\Delta}}{2.a}$$

$$x = \frac{5 \pm \sqrt{625}}{2.(-5)}$$

$$x' = \frac{5 + 25}{-10} = \frac{30}{-10} = -3$$

$$x'' = \frac{5 - 25}{-10} = \frac{-20}{-10} = 2$$

$$R; V = \{-3, 2\}$$

07. (F.M. Santos - SP) O determinante de

$$\begin{vmatrix} 1 & 0 & 0 & 0 & 0 \\ 2 & 2 & 0 & 0 & 0 \\ 3 & 2 & 1 & 0 & 0 \\ 4 & 2 & 3 & -2 & 0 \\ 5 & 1 & 2 & 3 & 3 \end{vmatrix} \text{ é:}$$

$$= 1.2.1.(-2).3 = -12 // \text{ Letra D.}$$