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Sala: CTII 317

### Tarefa Básica

1)

$$\begin{pmatrix} 1 & 2 & 2 \\ 1 & 1 & 4 \\ 1 & 4 & 1 \end{pmatrix} = -18 \rightarrow \det$$

$$\begin{pmatrix} 1 & -1 & 2 \\ 1 & -2 & 4 \\ 1 & -2 & 1 \end{pmatrix} = ?$$

é a matriz dividida

$$2 \div (-2) = -1 \quad 1 \div (-2) = -2 \quad 4 \div (-2) = -2$$

$$-18 \div (-2) = 9 \rightarrow \det \text{ letra E}$$

2)  $A \rightarrow$  matriz quadrada de ordem 4 e  $\det A = -6$   
 $(2A) = x - 97$

$$\det(2A) = 2^4 \cdot (-6)$$

$$16 \cdot (-6) = -96$$

$$-96 = x - 97$$

$$x = 97 - 96 = 1 \text{ letra C}$$

3)

$$y \begin{vmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{vmatrix} \cdot \frac{1}{x}$$

$$\left(\frac{1}{x}\right) \cdot y \cdot \det A \rightarrow (x/y) \cdot \det A$$

letra C

4)  $\begin{pmatrix} 2 & 1 & 0 \\ k & k & k \\ 1 & 2 & -2 \end{pmatrix} = 10$

$$\begin{pmatrix} 2 & 1 & 0 \\ k+4 & k+3 & k-1 \\ 1 & 2 & -2 \end{pmatrix}$$

$$\begin{vmatrix} 2 & 1 & 0 & 2 & 1 \\ k & k & k & k & k \\ 1 & 2 & -2 & 1 & 2 \end{vmatrix}$$

$$\det = -4k + k + 0 - 0 - 4k + 2k = 10$$

$$-5k = 10$$

$$k = -\frac{10}{5}$$

$$k = -2$$

$$\begin{vmatrix} 2 & 1 & 0 & 2 & 1 \\ 2 & 1 & -3 & 2 & 1 \\ 1 & 2 & -2 & 1 & 2 \end{vmatrix}$$

$$\det = -4 - 3 + 0 - 0 + 12 + 14$$

$$16 - 7 = 9 \text{ letra C}$$

5)  $\begin{pmatrix} 1 & -11 & 6 \\ -2 & 4 & -3 \\ -3 & -4 & 2 \end{pmatrix}$

letra D = uma fila como combinação linear das outras duas filas paralelas

$\det = \text{nulo}$

6)

$$\begin{vmatrix} 1 & x & x^2 \\ 1 & 2 & 4 \\ 1 & -3 & 9 \end{vmatrix} = 0$$

$$\begin{vmatrix} 1 & x & x^2 & 1 & x \\ 1 & 2 & 4 & 1 & 2 \\ 1 & -3 & 9 & 1 & -3 \end{vmatrix}$$

$$18 + 4x - 3x^2 - 2x^2 + 12 - 9x = 0$$

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

$$-x^2 - x + 6 = 0$$

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

$$\Delta = (-1)^2 - 4 \cdot (-1) \cdot 6$$

$$\Delta = 1 + 24$$

$$\Delta = 25$$

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

$$x = \frac{1 \pm \sqrt{25}}{2 \cdot (-1)}$$

$$x = \frac{1 \pm 5}{-2}$$

$$x^1 = \frac{1+5}{-2} = \frac{6}{-2} = -3$$

$$x^2 = \frac{1-5}{-2} = \frac{-4}{-2} = 2$$

$$\{-3, 2\}$$

$$\begin{array}{c|ccccc}
 7) & 4 & 0 & 0 & 0 & 0 \\
 & 2 & 2 & 0 & 0 & 0 \\
 & 3 & 2 & 1 & 0 & 0 \\
 & 4 & 2 & 3 & -2 & 0 \\
 & 5 & 1 & 2 & 3 & 3
 \end{array}$$

$$1 \cdot 2 \cdot 1 \cdot (-2) \cdot 3$$

$$2 \cdot (-2) \cdot 3$$

$$-4 \cdot 3$$

$$-12 \text{ letra D}$$