# Tarefa básica

1.

$3x + y = 1$

$15 + 3y = 0$ ---- $y = -5$

$3x + y = 1$ ---- $x = 2$

$x + y = -3$ (C)

2.

$$\begin{vmatrix} 1 & 0 & 1 \\ k & 1 & 3 \\ 1 & k & 3 \end{vmatrix} \begin{matrix} 1 & 0 \\ k & 1 \\ 1 & k \end{matrix}$$

$3 + k^2 - 1 - 3k$

$k^2 - 3k + 2 = 0$

$\Delta = 9 - 8$

$\Delta = 1$

$$k = \frac{3 \pm 1}{2} \begin{cases} \rightarrow x' = 2 \\ \rightarrow x'' = 1 \end{cases}$$

(C)

3.

$$\begin{bmatrix} 3 & 5 \\ 2 & 4 \end{bmatrix}$$

$D = -2$

$$B = A^{-1} = \begin{bmatrix} 4 & -5 \\ -2 & 3 \end{bmatrix} \cdot -2$$

$$B = A^{-1} = \begin{bmatrix} 2 & \frac{-5}{2} \\ -1 & \frac{3}{2} \end{bmatrix}$$

(C)

4.

$$\begin{vmatrix} x & 1 & 2 \\ 3 & 1 & 2 \\ 10 & 1 & x \end{vmatrix} \begin{matrix} x & 1 \\ 3 & 1 \\ 10 & 1 \end{matrix}$$

$x^2 + 26 - 20 - 5x$

$x^2 - 5x + 6 = 0$

$\Delta = 25 - 24$

$\Delta = 1$

$$x = \frac{5 \pm 1}{2} \begin{cases} \rightarrow x' = 3 \\ \rightarrow x'' = 2 \end{cases}$$

(A)

5. $\begin{vmatrix} -1 & -1 & 2 \\ 2 & 1 & -2 \\ 1 & 1 & -1 \end{vmatrix}$ $\begin{matrix} 1 & -1 \\ 2 & 1 \\ 1 & 1 \end{matrix}$ Det A = 7 − 6 Det A = 1

$2\ 2\ 2 \quad 1\ 2\ 4$

$Cof = \begin{bmatrix} 1 & 0 & 1 \\ 1 & -1 & 0 \\ 0 & 2 & 1 \end{bmatrix}$

$Cof^T = \begin{bmatrix} 1 & 1 & 0 \\ 0 & -1 & 2 \\ 1 & 0 & 1 \end{bmatrix}$ $A + A^{-1} = \begin{bmatrix} -1 & -1 & 2 \\ 2 & 1 & -2 \\ 1 & 1 & -1 \end{bmatrix} + \begin{bmatrix} 1 & 1 & 0 \\ 0 & -1 & 2 \\ 1 & 0 & 1 \end{bmatrix} =$

(B) $\begin{bmatrix} 0 & 0 & 2 \\ 2 & 0 & 0 \\ 2 & 1 & 0 \end{bmatrix}$

6. $(X \cdot A)^T = B \Rightarrow XA \cdot A^{-1} = B^T A^{-1} \Rightarrow X = B^T A^{-L}$ (B)

7. $\begin{bmatrix} 4 & 5 \\ 5 & 6 \end{bmatrix}$ Det = 1 $\rightarrow \begin{bmatrix} 6 & -5 \\ -5 & 4 \end{bmatrix}$ $6y - 5y = 1$, $-5x + 4x = -1$

$\begin{bmatrix} 6y & -5y \\ -5x & 4x \end{bmatrix} \cdot \begin{matrix} 1 \\ -1 \end{matrix} \rightarrow \begin{bmatrix} 6 & -5 \\ 5 & -4 \end{bmatrix} \cdot \begin{bmatrix} -1 \\ 1 \end{bmatrix}$

$\begin{bmatrix} -6 & 5 \\ 5 & -4 \end{bmatrix}$ (D)

8. $\begin{bmatrix} 2 & k \\ -2 & 1 \end{bmatrix}$ Det = 2 + 2k, k = −2 $\rightarrow \begin{bmatrix} 2 & -2 \\ -2 & 1 \end{bmatrix}$ (4, 2) Det = 2 − 4, Det = −2 (B)

9.

a) $(A+B) \cdot (A-B) = A^2 - AB + AB - B^2$

b) $(A+B)^2 = A^2 + 2AB + B^2 \rightarrow AB = B \cdot A$

c) $\frac{\det A}{\det A} = A$

d) $\det B = \frac{1}{\det A}$