1- $A = B^{-1}$, $A = \begin{bmatrix} x & 1 \\ 5 & 3 \end{bmatrix}$, $B = \begin{bmatrix} 3 & -1 \\ y & 2 \end{bmatrix}$, $x + y = ?$

$B \cdot A = I_2$ $\quad 3x - 5 = 1 - I$

$xy + 10 = 0 - II$

I $3x - 5 = 1$

$3x = 6$

$x = 2$

II $x - y + 10 = 0$

$2y = -10$

$y = -5$

$x + y$

$2 - 5$

-3

Alternativa C

2- $K = ?$, $A = \begin{bmatrix} 1 & 0 & 1 \\ K & 1 & 3 \\ 1 & K & 3 \end{bmatrix}$ $\quad Det = 0$ $\quad Det\ B = K^2 + 3 - 3K - 1$

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

$\Delta = 9 - 8 = 1$

$K' = \frac{3 + \sqrt{1}}{2} = 2$ $\quad K'' = \frac{3 - \sqrt{1}}{2} = 1$

Alternativa C.

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

$Det\ A = 12 - 10 = 2$

$\begin{bmatrix} 2 & -5/2 \\ -1 & 3/2 \end{bmatrix}$ = Alternativa C

4- Det ≠ 0

$Det = x^2 + 26 - (20 + 5x)$

$x^2 - 5x + 6 \neq 0$

$\Delta = 25 - 24 = 1$

$x' \neq \frac{5 + \sqrt{1}}{2} \neq 3$

$x'' \neq \frac{5 - \sqrt{1}}{2} \neq 2$

$\{x \neq 3 \text{ e } x \neq 2\}$

Alternativa A

5- $A = \begin{bmatrix} -1 & -1 & 2 \\ 2 & 1 & -2 \\ 1 & 1 & 1 \end{bmatrix}$, $A + A^{-1} = ?$

$Det\ A = 7 - 6 = 1$

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

Alternativa B.

6- $(X \cdot A)^t = B$

$X \cdot A = B^t$

$X \cdot A \cdot A^{-1} = B^t \cdot A^{-1}$

$X = B^t \cdot A^{-1}$ → Alternativa B.

7- $B=\begin{bmatrix} x \\ y \end{bmatrix}$, $C=\begin{bmatrix} 4x+5y \\ 5x+6y \end{bmatrix}$, $A^{-1}=?$, $AB=C$

$A=\begin{bmatrix} 4 & 5 \\ 5 & 6 \end{bmatrix}$ $\quad$ $\det A = 24-25=1$

$A^{-1}=\begin{bmatrix} -6 & 5 \\ 5 & -4 \end{bmatrix}$ → Alternativa D.

8- $A=\begin{bmatrix} 2 & K \\ -2 & 1 \end{bmatrix}$ $\quad$ $\det A = 2-(-2K)=2+2K$

$\det A \cdot \det A^{-1} = 4K^2+8K+3=0$

$\Delta = 64-48=16$

$K' = \frac{-8+4}{8} = \frac{-1}{2}$

$K'' = \frac{-8-4}{8} = \frac{-3}{2}$

Soma K:

$\frac{-1}{2} - \frac{3}{2}$

$\frac{-4}{2} = -2$

Alternativa B.

9- A) $A^2 - AB + BA - B^2$ → $AB \neq BA$

B) $A^2 + 2 \cdot A \cdot B + B^2$ → $AB = BA$

C) $\det(-A) = (-1)^2 \cdot \det A = \det A$ → $\frac{\det A}{\det(-A)} = 1$

D) $\det A \cdot \det B = 1$ → $\det B = \frac{1}{\det A}$