

a) PRIMERO, CALCULAR LOS C :

$$C = AB = \begin{pmatrix} 1 & -1 & 0 \\ 1 & 1 & 1 \\ x & x & -2 \end{pmatrix} \begin{pmatrix} 1 & 2 & 3 \\ 3 & 2 & 1 \\ 0 & 1 & 0 \end{pmatrix}$$

$$C = \begin{pmatrix} 1 \cdot 1 - 1 \cdot 3 + 0 \cdot 0 & & \\ -2 & 0 & 2 \\ 4 & 5 & 4 \\ 4x & 4x - 2 & 4x \end{pmatrix}$$

SEGUNDO, CALCULAR LOS  $|C|$ .

$$|C| = (-40x + 32x - 16) - (40x - 32x + 16)$$

$$|C| = -8x - 16 - 8x - 16 = -16x - 32$$

TERCERO,  $|C| = 0$ .

$$-16x - 32 = 0 \Rightarrow x = -2$$

C TIENE INVERSA SI  $x \neq -2$ ,  
YA QUE SI  $x = -2 \Rightarrow |C| = 0$ , Y  
SI  $|C| = 0$ , C NO TIENE INVERSA

b)

$$C = \begin{pmatrix} -2 & 0 & 2 \\ 4 & 5 & 4 \\ 8 & 6 & 8 \end{pmatrix}$$

C TIENE INVERSA  
YA QUE  $|C| \neq 0$ .

$$C^{-1} = \frac{(C^t)^{\text{Adj}}}{|C|} = \frac{\begin{pmatrix} -2 & 4 & 8 \\ 0 & 5 & 6 \\ 2 & 4 & 8 \end{pmatrix}^{\text{Adj}}}{-16 \cdot (2) - 32}$$

$$C^{-1} = \frac{\begin{pmatrix} \begin{vmatrix} 5 & 6 \\ 4 & 8 \end{vmatrix} & -\begin{vmatrix} 0 & 6 \\ 2 & 8 \end{vmatrix} & \begin{vmatrix} 0 & 5 \\ 2 & 4 \end{vmatrix} \\ -\begin{vmatrix} 4 & 8 \\ 4 & 8 \end{vmatrix} & \begin{vmatrix} -2 & 8 \\ 2 & 8 \end{vmatrix} & -\begin{vmatrix} -2 & 4 \\ 2 & 4 \end{vmatrix} \\ \begin{vmatrix} 4 & 8 \\ 5 & 6 \end{vmatrix} & -\begin{vmatrix} -2 & 8 \\ 0 & 6 \end{vmatrix} & \begin{vmatrix} -2 & 4 \\ 0 & 5 \end{vmatrix} \end{pmatrix}}{-64} = \frac{\begin{pmatrix} 16 & 12 & -10 \\ 0 & -32 & 16 \\ -16 & 12 & -10 \end{pmatrix}}{-64}$$

$$C^{-1} = \begin{pmatrix} -\frac{1}{4} & -\frac{3}{16} & \frac{5}{32} \\ 0 & \frac{1}{2} & -\frac{1}{4} \\ \frac{1}{4} & -\frac{3}{16} & \frac{5}{32} \end{pmatrix}$$