

9/3

$$A^2 X = 3AX + 4(B-E)$$

$$(A^2 - 3A)X = 4(B-E)$$

$$X = 4(A^2 - 3A)^{-1} \cdot (B-E)$$

$$C = A^2 - 3A = A \cdot (A - 3E) = \begin{pmatrix} 1 & 0 & 2 \\ 1 & 0 & 1 \\ 1 & 1 & 0 \end{pmatrix} \begin{pmatrix} -2 & 0 & 2 \\ 1 & -3 & 1 \\ 1 & 1 & -3 \end{pmatrix} = \begin{pmatrix} 0 & 2 & -4 \\ -1 & 1 & -1 \\ -1 & -3 & 3 \end{pmatrix}$$

$$\det C = (2 \cdot 12) - (4 \cdot 6) = -10 + 2 = -8$$

$$C_{11} = \begin{vmatrix} 1 & -1 \\ -3 & 3 \end{vmatrix} = 0$$

$$C_{21} = - \begin{vmatrix} 2 & -4 \\ -3 & 3 \end{vmatrix} = +6$$

$$C_{31} = \begin{vmatrix} 2 & -4 \\ 1 & -1 \end{vmatrix} = 2$$

$$C_{12} = - \begin{vmatrix} -1 & -1 \\ -1 & 3 \end{vmatrix} = 4$$

$$C_{22} = \begin{vmatrix} 0 & -4 \\ -1 & 3 \end{vmatrix} = -4$$

$$C_{32} = - \begin{vmatrix} 0 & -4 \\ -1 & -1 \end{vmatrix} = 4$$

$$C_{13} = \begin{vmatrix} -1 & 1 \\ -1 & -3 \end{vmatrix} = 4$$

$$C_{23} = - \begin{vmatrix} 0 & 2 \\ -1 & -3 \end{vmatrix} = -2$$

$$C_{33} = \begin{vmatrix} 0 & 2 \\ -1 & 1 \end{vmatrix} = +2$$

$$C^{-1} = \frac{1}{-8} \begin{pmatrix} 0 & 4 & 4 \\ 6 & -4 & -2 \\ 2 & 4 & 2 \end{pmatrix}^T = \frac{1}{8} \begin{pmatrix} 0 & -6 & -2 \\ -4 & 4 & -4 \\ -4 & 2 & -2 \end{pmatrix} = \frac{1}{4} \begin{pmatrix} 0 & -3 & -1 \\ -2 & 2 & -2 \\ -2 & 1 & -1 \end{pmatrix}$$

$$X = \frac{1}{4} \begin{pmatrix} 0 & -3 & -1 \\ -2 & 2 & -2 \\ -2 & 1 & -1 \end{pmatrix} 4 \begin{pmatrix} -1 & 1 & 1 \\ 1 & -1 & 1 \\ 1 & 1 & -1 \end{pmatrix} = \begin{pmatrix} 0 & -3 & -1 \\ -2 & 2 & -2 \\ -2 & 1 & -1 \end{pmatrix} \begin{pmatrix} -1 & 1 & 1 \\ 1 & -1 & 1 \\ 1 & 1 & -1 \end{pmatrix} = \begin{pmatrix} -4 & 2 & -2 \\ 2 & -6 & 2 \\ 2 & -4 & 0 \end{pmatrix}$$

ZKOUŠKA (NAVÍC)

$$L.S. = A^2 X = A \cdot AX = \begin{pmatrix} 1 & 0 & 2 \\ 1 & 0 & 1 \\ 1 & 1 & 0 \end{pmatrix} \begin{pmatrix} 1 & 0 & 2 \\ 1 & 0 & 1 \\ 1 & 1 & 0 \end{pmatrix} X = \begin{pmatrix} 3 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 0 & 3 \end{pmatrix} \begin{pmatrix} -4 & 2 & -2 \\ 2 & -6 & 2 \\ 2 & -4 & 0 \end{pmatrix} = \begin{pmatrix} -4 & -14 & -2 \\ -2 & -10 & -2 \\ -2 & -8 & -4 \end{pmatrix}$$

$$3AX = 3 \begin{pmatrix} 1 & 0 & 2 \\ 1 & 0 & 1 \\ 1 & 1 & 0 \end{pmatrix} \begin{pmatrix} -4 & 2 & -2 \\ 2 & -6 & 2 \\ 2 & -4 & 0 \end{pmatrix} = 3 \cdot \begin{pmatrix} 0 & -6 & -2 \\ -2 & -2 & -2 \\ -2 & -4 & 0 \end{pmatrix} = \begin{pmatrix} 0 & -18 & -6 \\ -6 & -6 & -6 \\ -6 & -12 & 0 \end{pmatrix}$$

$$4 \cdot (B-E) = \begin{pmatrix} -4 & 4 & 4 \\ 4 & -4 & 4 \\ 4 & 4 & -4 \end{pmatrix}$$

$$P.S. = 3AX + 4(B-E) = \begin{pmatrix} -4 & -14 & -2 \\ -2 & -10 & -2 \\ -2 & -8 & -4 \end{pmatrix}$$

LS=PS