

OPERACE S MATICEMI – PŘÍKLAD 1

$$\begin{array}{l}
 3X - 2A = BX - A \\
 A = \begin{pmatrix} 5 & 4 \\ 7 & 9 \end{pmatrix} \quad B = \begin{pmatrix} 4 & -2 \\ 1 & 0 \end{pmatrix} \\
 \hline
 3X - BX = 2A - A \\
 (3E - B) \cdot X = A \\
 X = (3E - B)^{-1} \cdot A
 \end{array}$$

1) $3E - B$:

$$\begin{pmatrix} 3 & 0 \\ 0 & 3 \end{pmatrix} - \begin{pmatrix} 4 & -2 \\ 1 & 0 \end{pmatrix} = \underline{\underline{\begin{pmatrix} -1 & 2 \\ -1 & 3 \end{pmatrix}}}$$

2) $(3E - B)^{-1}$:

$$\left(\begin{array}{cc|cc} -1 & 2 & 1 & 0 \\ -1 & 3 & 0 & 1 \end{array} \right) \sim \left(\begin{array}{cc|cc} -1 & 2 & 1 & 0 \\ 0 & -1 & 1 & -1 \end{array} \right) \sim \left(\begin{array}{cc|cc} -1 & 0 & 3 & -2 \\ 0 & -1 & 1 & -1 \end{array} \right) \sim \left(\begin{array}{cc|cc} 1 & 0 & -3 & 2 \\ 0 & 1 & -1 & 1 \end{array} \right)$$

$$X = \overbrace{\begin{pmatrix} -3 & 2 \\ -1 & 1 \end{pmatrix}}^{(3E-B)^{-1}} \cdot \overbrace{\begin{pmatrix} 5 & 4 \\ 7 & 9 \end{pmatrix}}^A = \begin{pmatrix} -15+14 & -12+18 \\ -5+7 & -4+9 \end{pmatrix} = \underline{\underline{\begin{pmatrix} -1 & 6 \\ 2 & 5 \end{pmatrix}}}$$