

MATICOVÉ ROVNICE

$$\boxed{m} \quad 2X - A = B + AX \quad A = \begin{pmatrix} 1 & 0 \\ -2 & 1 \end{pmatrix} \quad B = \begin{pmatrix} 0 & 1 \\ 2 & 5 \end{pmatrix}$$

$$2X - AX = B + A$$

$$(2J - A) \cdot X = B + A \quad | \cdot (2J - A)^{-1} \text{ zleva}$$

$$(2J - A)^{-1} \cdot (2J - A) \cdot X = (2J - A)^{-1} \cdot (B + A)$$

$$X = \underline{\underline{(2J - A)^{-1} \cdot (B + A)}}$$

$$2J - A = 2 \cdot \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} - \begin{pmatrix} 1 & 0 \\ -2 & 1 \end{pmatrix} = \begin{pmatrix} 2 & 0 \\ 0 & 2 \end{pmatrix} - \begin{pmatrix} 1 & 0 \\ -2 & 1 \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 2 & 1 \end{pmatrix}$$

$$(2J - A)^{-1} = \frac{1}{1} \begin{pmatrix} 1 & 0 \\ -2 & 1 \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ -2 & 1 \end{pmatrix}$$

$$B + A = \begin{pmatrix} 0 & 1 \\ 2 & 5 \end{pmatrix} + \begin{pmatrix} 1 & 0 \\ -2 & 1 \end{pmatrix} = \begin{pmatrix} 1 & 1 \\ 0 & 6 \end{pmatrix}$$

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

$$\boxed{m} \quad X + A = 3A - XC \quad A = \begin{pmatrix} -1 & 2 \\ 1 & -1 \end{pmatrix} \quad C = \begin{pmatrix} 1 & 2 \\ 0 & 3 \end{pmatrix}$$

$$X + XC = 3A - A$$

$$X(J + C) = 2A \quad | (J + C)^{-1} \text{ zprava}$$

$$X(J + C)(J + C)^{-1} = 2A(J + C)^{-1}$$

$$X = \underline{\underline{2A \cdot (J + C)^{-1}}}$$

$$2A = 2 \cdot \begin{pmatrix} -1 & 2 \\ 1 & -1 \end{pmatrix} = \begin{pmatrix} -2 & 4 \\ 2 & -2 \end{pmatrix}$$

$$J + C = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} + \begin{pmatrix} 1 & 2 \\ 0 & 3 \end{pmatrix} = \begin{pmatrix} 2 & 2 \\ 0 & 4 \end{pmatrix}$$

$$(J + C)^{-1} = \frac{1}{8} \begin{pmatrix} 4 & -2 \\ 0 & 2 \end{pmatrix}$$

$$X = \begin{pmatrix} -2 & 4 \\ 2 & -2 \end{pmatrix} \cdot \frac{1}{8} \begin{pmatrix} 4 & -2 \\ 0 & 2 \end{pmatrix} = \frac{1}{8} \begin{pmatrix} -8 & 12 \\ 8 & -8 \end{pmatrix} = \underline{\underline{\begin{pmatrix} -1 & \frac{3}{2} \\ 1 & -1 \end{pmatrix}}}$$