

Vyřešte maticovou rovnici

1.

$$\mathbf{A} \cdot \mathbf{X} \cdot \mathbf{A} + \mathbf{B} = \mathbf{C}, \text{ pro matice: } \mathbf{A} = \begin{pmatrix} 0 & -1 \\ 1 & 1 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 0 & 1 \\ -1 & 2 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} -4 & 0 \\ 5 & 4 \end{pmatrix}.$$

2.

$$\mathbf{A}^{-1} \cdot \mathbf{X} \cdot \mathbf{A} - \mathbf{B} = \mathbf{C} \text{ pro matice: } \mathbf{A} = \begin{pmatrix} -1 & 0 \\ 2 & 1 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 2 & 1 \\ 1 & 2 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} -5 & -3 \\ 5 & 3 \end{pmatrix}.$$

3.

$$\mathbf{A} \cdot \mathbf{X} \cdot \mathbf{A}^{-1} + \mathbf{B} = \mathbf{C} \text{ pro matice: } \mathbf{A} = \begin{pmatrix} -1 & 0 \\ 2 & 1 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 2 & 1 \\ 1 & 2 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} -1 & -1 \\ 7 & 7 \end{pmatrix}.$$

4.

$$\mathbf{A} \cdot (\mathbf{X} - \mathbf{B}) = \mathbf{C} \text{ pro matice: } \mathbf{A} = \begin{pmatrix} 1 & 2 \\ 2 & 3 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 3 & 2 & 1 \\ 3 & 2 & 1 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 3 & 0 & 3 \\ 5 & 0 & 5 \end{pmatrix}.$$

5.

$$(\mathbf{B} - \mathbf{X}) \cdot \mathbf{A}, \text{ pro matice: } \mathbf{A} = \begin{pmatrix} 1 & -2 \\ -1 & 3 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 2 & 1 \\ 1 & 1 \\ 0 & 1 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 0 & 1 \\ 1 & -3 \\ 1 & -4 \end{pmatrix}.$$

6.

$$\mathbf{X} \cdot \mathbf{A} + \mathbf{B} = \mathbf{C}, \text{ pro matice: } \mathbf{A} = \begin{pmatrix} -3 & 1 \\ 4 & -1 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 0 & 1 \\ 0 & 2 \\ 0 & 3 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 1 & 1 \\ 2 & 2 \\ 3 & 3 \end{pmatrix}.$$

7.

$$\mathbf{A} \cdot \mathbf{X} + \mathbf{B} = 4 \cdot \mathbf{C}, \text{ pro matice: } \mathbf{A} = \begin{pmatrix} -3 & 2 \\ 4 & -3 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 3 & 2 & 3 \\ 4 & 3 & 4 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 0 & 1 & 0 \\ 2 & 0 & 2 \end{pmatrix}.$$

8.

$$\mathbf{A} \cdot \mathbf{X} + \mathbf{B} = \mathbf{C} \text{ pro matice: } \mathbf{A} = \begin{pmatrix} 4 & 1 \\ 3 & 1 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 3 & 2 & 1 \\ 1 & 2 & 3 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 9 & 8 & 7 \\ 6 & 7 & 8 \end{pmatrix}.$$

9.

$$\mathbf{X} \cdot \mathbf{A}^{-1} - \mathbf{B} \cdot \mathbf{A} = \mathbf{C}, \text{ pro matice: } \mathbf{A} = \begin{pmatrix} 1 & 0 \\ -2 & 1 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 1 & 2 \\ 1 & 1 \\ 1 & 0 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 1 & 3 \\ 1 & 2 \\ 4 & 1 \end{pmatrix}.$$

10.

$$\mathbf{A}(\mathbf{B} + \mathbf{X}) = \mathbf{C} \text{ pro matice: } \mathbf{A} = \begin{pmatrix} 1 & -2 \\ -1 & 3 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 1 & 0 & 2 \\ 2 & 0 & 1 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} -6 & 0 & 0 \\ 10 & 0 & 2 \end{pmatrix}.$$

11.

$$(\mathbf{X} - \mathbf{B}) \cdot \mathbf{A} = \mathbf{C} \text{ pro matice: } \mathbf{A} = \begin{pmatrix} 1 & 2 \\ 2 & 3 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 3 & 2 \\ 1 & 1 \\ 2 & 3 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 1 & 2 \\ 3 & 5 \\ 2 & 3 \end{pmatrix}.$$

12.

$$\mathbf{X} \cdot \mathbf{A} + 3 \cdot \mathbf{B} = \mathbf{C}, \text{ pro matice: } \mathbf{A} = \begin{pmatrix} 3 & 1 \\ 8 & 3 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 2 & 1 \\ 4 & 2 \\ 6 & 3 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 1 & 1 \\ 2 & 2 \\ 3 & 3 \end{pmatrix}.$$

13.

$$\mathbf{X} \cdot \mathbf{A} - \mathbf{B} = \mathbf{C} \text{ pro matice: } \mathbf{A} = \begin{pmatrix} 1 & 3 \\ 2 & 4 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 3 & 2 \\ 1 & 1 \\ 2 & 3 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 0 & 5 \\ -1 & -1 \\ 5 & 0 \end{pmatrix}.$$

14.

$$(\mathbf{X} - \mathbf{B}) \cdot \mathbf{A} = \mathbf{C}, \text{ pro matice: } \mathbf{A} = \begin{pmatrix} 2 & 5 \\ 1 & 3 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 0 & 1 \\ 2 & 2 \\ 1 & 0 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 3 & 8 \\ 3 & 8 \\ 3 & 8 \end{pmatrix}.$$

15.

$$\mathbf{A} \cdot \mathbf{X} + \mathbf{B} = \mathbf{C}, \text{ pro matice: } \mathbf{A} = \begin{pmatrix} -3 & 1 \\ 4 & -1 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 1 & 2 & 3 \\ 3 & 2 & 1 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 0 & 1 & 2 \\ 5 & 4 & 3 \end{pmatrix}.$$

16.

$$\mathbf{X} \cdot \mathbf{A} - \mathbf{B} = \mathbf{C}, \text{ pro matice: } \mathbf{A} = \begin{pmatrix} -2 & 0 \\ 2 & 1 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 2 & 1 \\ 1 & 2 \\ -1 & 0 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 0 & 1 \\ -3 & -1 \\ -1 & -1 \end{pmatrix}.$$

17.

$$\mathbf{A} \cdot \mathbf{X} \cdot \mathbf{A}^{-1} - \mathbf{B} = \mathbf{C}, \text{ pro matice: } \mathbf{A} = \begin{pmatrix} 2 & 1 \\ 1 & 1 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} -2 & 5 \\ -1 & 2 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} -1 & 6 \\ -1 & 6 \end{pmatrix}.$$

18.

$$(\mathbf{X} - \mathbf{B}) \cdot \mathbf{A} = \mathbf{C} \text{ pro matice: } \mathbf{A} = \begin{pmatrix} 1 & 3 \\ 2 & 4 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 3 & 2 \\ 1 & 1 \\ 2 & 3 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 1 & 3 \\ 0 & 0 \\ 2 & 4 \end{pmatrix}.$$

19.

$$\mathbf{A} \cdot \mathbf{X} + \mathbf{B} = \mathbf{C} \text{ pro matice: } \mathbf{A} = \begin{pmatrix} 2 & 3 \\ 3 & 4 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 3 & 2 & 1 \\ 1 & 2 & 3 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 5 & 4 & 3 \\ 4 & 5 & 6 \end{pmatrix}.$$

20.

$$\mathbf{A} \cdot \mathbf{X} - \mathbf{B} = \mathbf{C} \text{ pro matice: } \mathbf{A} = \begin{pmatrix} -1 & 0 \\ 2 & 1 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 3 & 2 & 1 \\ 1 & 2 & 3 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} -4 & -4 & -4 \\ 4 & 4 & 4 \end{pmatrix}.$$

21.

$$\mathbf{B} - \mathbf{A}^{-1} \cdot \mathbf{X} \cdot \mathbf{A} = \mathbf{C}, \text{ pro matice: } \mathbf{A} = \begin{pmatrix} 3 & 3 \\ 2 & 1 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 2 & 1 \\ 2 & 0 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 0 & -1 \\ -2 & -3 \end{pmatrix}.$$

22.

$$\mathbf{A} \cdot \mathbf{X} + \mathbf{B} = \mathbf{C}, \text{ pro matice: } \mathbf{A} = \begin{pmatrix} -3 & 1 \\ 8 & -3 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 1 & 1 & 1 \\ 2 & 2 & 2 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \end{pmatrix}.$$

23.

$$\mathbf{A}(\mathbf{B} + \mathbf{X}) = \mathbf{C} \text{ pro matice: } \mathbf{A} = \begin{pmatrix} 0 & 1 \\ -1 & 1 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 1 & 1 & 2 \\ 2 & 1 & 1 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 4 & 3 & 2 \\ 2 & 0 & -2 \end{pmatrix}.$$

24.

$$\mathbf{A} \cdot \mathbf{X} - \mathbf{B} = \mathbf{C} \text{ pro matice: } \mathbf{A} = \begin{pmatrix} 1 & 2 \\ 2 & 3 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 3 & 2 & 1 \\ 3 & 2 & 1 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 1 & 1 & 1 \\ 3 & 3 & 3 \end{pmatrix}.$$

25.

$$\mathbf{A} \cdot \mathbf{X} + \mathbf{B} = \mathbf{C}, \text{ pro matice: } \mathbf{A} = \begin{pmatrix} 4 & 3 \\ 1 & 1 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} -1 & 0 & 2 \\ 2 & 0 & -1 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 4 & 0 & 1 \\ 3 & 0 & -1 \end{pmatrix}.$$

Vyřešte maticovou rovnici

1.  
 $\mathbf{X} = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}.$

2.  
 $\mathbf{X} = \begin{pmatrix} 1 & 2 \\ 2 & 1 \end{pmatrix}$

3.  
 $\mathbf{X} = \begin{pmatrix} 1 & 2 \\ 2 & 1 \end{pmatrix}$

4.  
 $\mathbf{X} = \begin{pmatrix} 4 & 2 & 2 \\ 4 & 2 & 2 \end{pmatrix}$

5.  
 $\mathbf{X} = \begin{pmatrix} 1 & 0 \\ 1 & 2 \\ 1 & 3 \end{pmatrix}.$

6.  
 $\mathbf{X} = \begin{pmatrix} 1 & 1 \\ 2 & 2 \\ 3 & 3 \end{pmatrix}$

7.  
 $\mathbf{X} = \begin{pmatrix} 1 & 0 & 1 \\ 0 & 1 & 0 \end{pmatrix}$

8.  
 $\mathbf{X} = \begin{pmatrix} 1 & 1 & 1 \\ 2 & 2 & 2 \end{pmatrix}.$

9.  
 $\mathbf{X} = \begin{pmatrix} 2 & 1 \\ 0 & 1 \\ 1 & 1 \end{pmatrix}.$

10.  
 $\mathbf{X} = \begin{pmatrix} 1 & 0 & 2 \\ 2 & 0 & 1 \end{pmatrix}.$

11.  
 $\mathbf{X} = \begin{pmatrix} 4 & 2 \\ 2 & 2 \\ 2 & 4 \end{pmatrix}.$

12.  
 $\mathbf{X} = \begin{pmatrix} 1 & -1 \\ 2 & -2 \\ 3 & -3 \end{pmatrix}$

13.  
 $\mathbf{X} = \begin{pmatrix} 1 & 1 \\ 0 & 0 \\ -11 & 9 \end{pmatrix}.$

14.  
 $\mathbf{X} = \begin{pmatrix} 1 & 2 \\ 3 & 3 \\ 2 & 1 \end{pmatrix}.$

15.  
 $\mathbf{X} = \begin{pmatrix} 1 & 1 & 1 \\ 2 & 2 & 2 \end{pmatrix}$

16.  
 $\mathbf{X} = \begin{pmatrix} 1 & 2 \\ 2 & 1 \\ 0 & -1 \end{pmatrix}$

17.  
 $\mathbf{X} = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}.$

18.  
 $\mathbf{X} = \begin{pmatrix} 4 & 2 \\ 1 & 1 \\ 2 & 4 \end{pmatrix}.$

19.  
 $\mathbf{X} = \begin{pmatrix} 1 & 1 & 1 \\ 0 & 0 & 0 \end{pmatrix}.$

20.  
 $\mathbf{X} = \begin{pmatrix} 1 & 2 & 3 \\ 3 & 2 & 1 \end{pmatrix}$

21.  
 $\mathbf{X} = \begin{pmatrix} 4 & 3 \\ 2 & 1 \end{pmatrix}.$

22.  
 $\mathbf{X} = \begin{pmatrix} 1 & 1 & 1 \\ 3 & 3 & 3 \end{pmatrix}$

23.  
 $\mathbf{X} = \begin{pmatrix} 1 & 2 & 2 \\ 2 & 2 & 1 \end{pmatrix}.$

24.  
 $\mathbf{X} = \begin{pmatrix} 0 & 1 & 2 \\ 2 & 1 & 0 \end{pmatrix}$

25.  
 $\mathbf{X} = \begin{pmatrix} 2 & 0 & -1 \\ -1 & 0 & 1 \end{pmatrix}.$