2016/2017

Vyřešte soustavu rovnic

1.
$$\begin{aligned} 2x_1 + 2x_2 - x_3 + x_4 &= 0 \\ 3x_1 - x_2 + x_4 &= 0 \\ 3x_1 - 2x_2 - 2x_3 + 2x_4 &= 0 \\ -3x_1 + 10x_2 - x_3 - x_4 &= 0 \end{aligned}$$

2.
$$\begin{aligned} -3x_1 - x_2 + x_3 + 3x_4 &= 0 \\ 2x_1 + 2x_2 - 2x_3 - 2x_4 &= 0 \\ -x_1 - 3x_2 + 3x_3 + x_4 &= 0 \\ 3x_2 + 2x_3 + 5x_4 &= 0 \end{aligned}$$

3.
$$\begin{aligned} x_1 - x_3 + x_4 &= 0 \\ 2x_1 + 3x_2 + x_4 &= 0 \\ 3x_1 + 3x_2 - x_3 + 2x_4 &= 0 \\ 2x_1 + 3x_2 + 2x_4 &= 0 \end{aligned}$$

4.
$$\begin{aligned} 2x_2 - x_3 + 2x_4 &= 0 \\ 3x_1 - x_2 + 2x_3 + x_4 &= 0 \\ 3x_1 + x_2 + x_3 + 3x_4 &= 0 \\ 3x_1 + 3x_2 + 5x_4 &= 0 \end{aligned}$$

5.
$$\begin{aligned} -x_1 - x_3 + x_4 &= 0 \\ 2x_1 + 2x_2 - x_3 + 2x_4 &= 0 \\ 2x_2 - 3x_3 + 4x_4 &= 0 \\ -9x_1 - 6x_2 + x_3 &= 0 \\ -x_1 - 2x_2 + 3x_3 &= 0 \end{aligned}$$

6.
$$\begin{aligned} 2x_2 + x_3 + 2x_4 &= 0 \\ 3x_1 + x_2 + 2x_3 + x_4 &= 0 \\ x_1 + x_2 + x_3 + x_4 &= 0 \\ x_1 + 3x_2 + 2x_3 + 3x_4 &= 0 \end{aligned}$$

7.
$$\begin{aligned} 2x_1 + 2x_2 - x_3 + 2x_4 &= 0 \\ x_1 - x_2 + x_4 &= 0 \\ 3x_1 + x_2 - x_3 + 3x_4 &= 0 \end{aligned}$$

8.
$$\begin{aligned} 2x_1 + x_2 - x_3 + x_4 &= 0 \\ 3x_1 - 2x_2 + x_4 &= 0 \\ 3x_1 - 4x_2 - 2x_3 + 2x_4 &= 0 \\ -3x_1 + 11x_2 - x_3 - x_4 &= 0 \\ -x_1 + 5x_2 + x_3 - x_4 &= 0 \end{aligned}$$

9.
$$\begin{aligned} x_1 + 2x_2 - x_3 + x_4 &= 0 \\ 2x_1 + 3x_2 + x_3 + 3x_4 &= 0 \\ 3x_1 - x_2 - 3x_3 - x_4 &= 0 \\ 2x_1 + 2x_2 + x_4 &= 0 \end{aligned}$$

10.
$$\begin{aligned} x_1 + 2x_2 + 3x_3 + 4x_4 &= 0 \\ 4x_1 + 3x_2 + 2x_3 + x_4 &= 0 \\ 2x_1 + x_2 + 4x_3 + 3x_4 &= 0 \\ 3x_1 + 4x_2 + x_3 + 2x_4 &= 0 \end{aligned}$$

11.
$$\begin{aligned} 2x_1 + 2x_2 - x_3 &= 0 \\ x_1 - x_2 + x_3 &= 0 \\ 3x_1 + x_2 &= 0 \\ 2x_1 + 3x_2 - x_3 &= 0 \end{aligned}$$

12.
$$\begin{aligned} 3x_1 + 2x_2 - x_3 + x_4 &= 0 \\ 3x_2 + 2x_3 + 3x_4 &= 0 \\ 3x_1 - x_2 - 3x_3 - x_4 &= 0 \end{aligned}$$

13.
$$\begin{aligned} 2x_2 - x_3 + 2x_4 &= 0 \\ 3x_1 - x_2 + 2x_3 + x_4 &= 0 \\ 3x_1 + x_2 + x_3 + 3x_4 &= 0 \\ x_1 + 2x_3 + 3x_4 &= 0 \end{aligned}$$

14.
$$\begin{aligned} x_1 + 2x_2 - x_3 + x_4 &= 0 \\ 2x_1 + 3x_2 + 2x_3 + 3x_4 &= 0 \\ 3x_1 - x_2 - 3x_3 - x_4 &= 0 \end{aligned}$$

15.
$$\begin{aligned} 2x_1 - x_3 + 3x_4 &= 0 \\ 4x_1 - x_2 + x_3 + 4x_4 &= 0 \\ 10x_1 - 2x_2 + x_3 + 11x_4 &= 0 \\ -2x_1 + 3x_2 - 8x_3 + 3x_4 &= 0 \\ x_2 - 3x_3 + 2x_4 &= 0 \end{aligned}$$

16.
$$\begin{aligned} 3x_1 + 2x_2 - x_3 + 2x_4 &= 0 \\ 3x_1 + 3x_2 - x_3 + 2x_4 &= 0 \\ x_2 + x_4 &= 0 \end{aligned}$$

17.
$$\begin{aligned} 2x_2 - x_3 + 2x_4 &= 0 \\ 3x_1 - x_2 + 2x_3 + x_4 &= 0 \\ 3x_1 + x_2 + x_3 + 3x_4 &= 0 \\ 2x_1 + 2x_2 + 2x_4 &= 0 \end{aligned}$$

18.
$$\begin{aligned} 2x_1 + 2x_2 - x_3 &= 0 \\ x_1 - x_2 + x_3 &= 0 \\ 3x_1 + x_2 &= 0 \\ 2x_1 + 2x_2 - x_3 &= 0 \end{aligned}$$

19.
$$\begin{aligned} x_1 + 2x_2 - x_3 + 2x_4 &= 0 \\ 3x_1 + 3x_2 - x_3 + 2x_4 &= 0 \\ 2x_1 + 2x_2 + x_3 + x_4 &= 0 \end{aligned}$$

20.
$$\begin{aligned} 2x_2 - x_3 + 2x_4 &= 0 \\ 3x_1 - x_2 + x_4 &= 0 \\ 3x_1 + x_2 - x_3 + 3x_4 &= 0 \\ 3x_1 + 3x_2 - 2x_3 + 5x_4 &= 0 \end{aligned}$$

21.
$$\begin{aligned} 3x_1 + 2x_2 - x_3 + 2x_4 &= 0 \\ 3x_1 + 3x_2 + x_3 + x_4 &= 0 \\ x_2 + 2x_3 - x_4 &= 0 \end{aligned}$$

22.
$$\begin{aligned} 3x_1 + 2x_2 - x_3 + 2x_4 &= 0 \\ 3x_1 + 2x_3 + x_4 &= 0 \\ 2x_1 + x_2 + 2x_3 - x_4 &= 0 \\ 2x_1 - 2x_2 + 4x_4 &= 0 \end{aligned}$$

23.
$$\begin{aligned} 2x_1 + 2x_2 - x_3 &= 0 \\ x_1 - x_2 + x_3 &= 0 \\ x_1 - x_2 + 3x_3 &= 0 \\ 2x_1 + 3x_2 + x_3 &= 0 \end{aligned}$$

24.
$$\begin{aligned} x_1 - x_3 + x_4 &= 0 \\ 3x_1 + 3x_2 - x_3 + 2x_4 &= 0 \\ 2x_1 + 2x_2 + x_4 &= 0 \\ -2x_1 - 6x_2 - 2x_3 &= 0 \end{aligned}$$

25.
$$\begin{aligned} -x_1 - x_3 + x_4 &= 0 \\ 2x_1 + 2x_2 - x_3 + 2x_4 &= 0 \\ 3x_1 + 4x_2 - 3x_3 + 5x_4 &= 0 \\ -11x_1 - 6x_2 - 2x_3 - x_4 &= 0 \\ -4x_1 - 2x_2 - x_3 &= 0 \end{aligned}$$

2016/2017

Vyřešte soustavu rovnic

1. $x_1 = -6r,\ x_2 = r,\ x_3 = 9r,\ x_4 = 19r,\ \ r \in \mathbb{R}.$

2. $x_1 = r,\ x_2 = -r,\ x_3 = -r,\ x_4 = r,\ \ r \in \mathbb{R}.$

3. $x_1 = 3r,\ x_2 = -2r,\ x_3 = 3r,\ x_4 = 0,\ r, s, t \in \mathbb{R},$

4. $x_1 = -2r - s,\ x_2 = s - 3r,\ x_3 = 2s,\ x_4 = 3r,\ \ r, s \in \mathbb{R}$

5. $x_1 = 8r,\ x_2 = -13r,\ x_3 = -6r,\ , s, t \in \mathbb{R}.$

6. $x_1 = -s,\ x_2 = -r - s,\ x_3 = 2s,\ x_4 = r,\ r, s \in \mathbb{R}.$

7. $x_1 = s - r,\ x_2 = s,\ x_3 = 4s,\ x_4 = r,\ \ r, s \in \mathbb{R}.$

8. $x_1 = -6r,\ x_2 = r,\ x_3 = 9r,\ x_4 = 20r,\ \ r \in \mathbb{R}.$

9. $x_1 = 0,\ x_2 = 0,\ x_3 = 0,\ x_4 = 0.$

10. $x_1 = r,\ x_2 = -r,\ x_3 = -r,\ x_4 = r,\ \ r \in \mathbb{R}.$

11. $x_1 = 0,\ x_2 = 0,\ x_3 = 0,\ x_4 = 0.$

12. $x_1 = 7r,\ x_2 = -6r,\ x_3 = 9r,\ x_4 = 0,\ r \in \mathbb{R},$

13. $x_1 = r,\ x_2 = -16r,\ x_3 = -14r,\ x_4 = 9r,\ \ r \in \mathbb{R}.$

14. $x_1 = -7r,\ x_2 = -16r,\ x_3 = -11r,\ x_4 = 28r,\ r \in \mathbb{R},$

15. $x_1 = s - 3r,\ x_2 = 6s - 4r,\ x_3 = 2s,\ x_4 = 2r,\ \ r, s \in \mathbb{R}.$

16. $x_1 = r,\ x_2 = 0,\ x_3 = 3r,\ x_4 = 0,\ r \in \mathbb{R}.$

17. $x_1 = -r,\ x_2 = r,\ x_3 = 2r,\ x_4 = 0,\ \ r \in \mathbb{R}.$

18. $x_1 = -r,\ x_2 = 3r,\ x_3 = 4r,\ \ r \in \mathbb{R}.$

19. $x_1 = 3r,\ x_2 = -6r,\ x_3 = r,\ x_4 = 5r,\ r \in \mathbb{R}.$

20. $x_1 = s - 2r,\ x_2 = 3s - 3r,\ x_3 = 6s,\ x_4 = 3r,\ \ r, s \in \mathbb{R}.$

21. $x_1 = 5s - 4r,\ x_2 = 3r - 6s,\ x_3 = 3s,\ x_4 = 3r,\ r, s \in \mathbb{R}.$

22. $x_1 = -r,\ x_2 = r,\ x_3 = r,\ x_4 = r,\ r \in \mathbb{R}.$

23. $x_1 = 0,\ x_2 = 0,\ x_3 = 0,\ x_4 = 0.$

24. $x_1 = -r,\ x_2 = 0,\ x_3 = r,\ x_4 = 2r,\ r \in \mathbb{R}.$

25. $x_1 = r - 2s,\ x_2 = 3s - 2r,\ x_3 = 2s,\ x_4 = r,\ \ r, s \in \mathbb{R}.$