

## ИНДИВИДУАЛЬНЫЕ ЗАДАНИЯ

### 1. ВЫЧИСЛИТЬ ОПРЕДЕЛИТЕЛИ.

$$1.1 \text{ а)} \begin{vmatrix} 1 & -1 & 2 \\ 2 & 4 & 5 \\ 8 & 10 & -1 \end{vmatrix};$$

$$1.6 \text{ а)} \begin{vmatrix} 1 & 4 & 1 \\ -3 & 2 & 1 \\ 1 & -1 & 2 \end{vmatrix};$$

$$1.11 \text{ а)} \begin{vmatrix} 7 & 4 & 2 \\ -3 & 2 & 9 \\ 7 & 5 & 2 \end{vmatrix};$$

$$\text{б)} \begin{vmatrix} 2 & -1 & 1 & 0 \\ 0 & 1 & 2 & -1 \\ 3 & -1 & 2 & 3 \\ 3 & 1 & 6 & 1 \end{vmatrix}.$$

$$\text{б)} \begin{vmatrix} -8 & 10 & 12 & 1 \\ 18 & 4 & 6 & 2 \\ 9 & -3 & 8 & -1 \\ 0 & 5 & 12 & 3 \end{vmatrix}.$$

$$\text{б)} \begin{vmatrix} 5 & -6 & 10 & -7 \\ -3 & 4 & -2 & 2 \\ -2 & 2 & -4 & 5 \\ 6 & -8 & 7 & -4 \end{vmatrix}.$$

$$1.2 \text{ а)} \begin{vmatrix} -17 & 7 & -1 \\ 7 & 1 & 5 \\ 10 & -5 & -2 \end{vmatrix};$$

$$1.7 \text{ а)} \begin{vmatrix} -9 & 4 & 1 \\ -8 & 2 & 1 \\ -3 & -1 & 2 \end{vmatrix};$$

$$1.12 \text{ а)} \begin{vmatrix} 7 & 5 & 2 \\ -2 & 2 & 3 \\ -4 & 1 & 1 \end{vmatrix};$$

$$\text{б)} \begin{vmatrix} 4 & 3 & 2 & 1 \\ -1 & 1 & 1 & 1 \\ 1 & 1 & 1 & -1 \\ 1 & 2 & 3 & 4 \end{vmatrix}.$$

$$\text{б)} \begin{vmatrix} -1 & 0 & 2 & 15 \\ 4 & 3 & 7 & 10 \\ -5 & 1 & -8 & 14 \\ 10 & 12 & 1 & 9 \end{vmatrix}.$$

$$\text{б)} \begin{vmatrix} -3 & 4 & -2 & 2 \\ -2 & 2 & -4 & 5 \\ 6 & -8 & 7 & -4 \\ 2 & 1 & 7 & 0 \end{vmatrix}.$$

$$1.3 \text{ а)} \begin{vmatrix} 2 & -1 & 0 \\ -1 & 2 & 4 \\ 1 & -1 & 1 \end{vmatrix};$$

$$1.8 \text{ а)} \begin{vmatrix} 1 & -9 & 1 \\ -3 & -8 & 1 \\ 1 & -3 & 2 \end{vmatrix};$$

$$1.13 \text{ а)} \begin{vmatrix} -3 & 7 & 5 \\ -1 & -2 & 2 \\ -1 & -4 & 1 \end{vmatrix};$$

$$\text{б)} \begin{vmatrix} 0 & 2 & 2 & 1 \\ 1 & -3 & -1 & 1 \\ -2 & 0 & -4 & 1 \\ 4 & 6 & 1 & 0 \end{vmatrix}.$$

$$\text{б)} \begin{vmatrix} 18 & 3 & 55 & 16 \\ 5 & -6 & 10 & -7 \\ -2 & -2 & -3 & 5 \\ 10 & -2 & -4 & 7 \end{vmatrix}.$$

$$\text{б)} \begin{vmatrix} 4 & -2 & 2 & -2 \\ 2 & -4 & 5 & -3 \\ -8 & 7 & -4 & -1 \\ 1 & 7 & 0 & 5 \end{vmatrix}.$$

$$1.4 \text{ а)} \begin{vmatrix} 1 & -3 & -9 \\ -5 & -1 & -6 \\ -3 & -7 & -7 \end{vmatrix};$$

$$1.9 \text{ а)} \begin{vmatrix} 1 & 4 & -9 \\ -3 & 2 & -8 \\ 1 & -1 & -3 \end{vmatrix};$$

$$1.14 \text{ а)} \begin{vmatrix} 4 & 2 & 3 \\ 2 & 9 & -2 \\ 5 & 2 & 3 \end{vmatrix};$$

$$\text{б)} \begin{vmatrix} 13 & 14 & 15 & 13 \\ 18 & 18 & 23 & 22 \\ 5 & 6 & 7 & 7 \\ 25 & 29 & 30 & 26 \end{vmatrix}.$$

$$\text{б)} \begin{vmatrix} 2 & 1 & 7 & 0 \\ 5 & 2 & -1 & -7 \\ -2 & 10 & -6 & 5 \\ -6 & 4 & 2 & 1 \end{vmatrix}.$$

$$\text{б)} \begin{vmatrix} 5 & -6 & -7 & -2 \\ -3 & 4 & 2 & -2 \\ -2 & 2 & 5 & -3 \\ 6 & -8 & -4 & -1 \end{vmatrix}.$$

$$1.5 \text{ а)} \begin{vmatrix} 1 & 4 & 1 \\ -3 & 2 & 0 \\ 1 & -1 & 2 \end{vmatrix};$$

$$1.10 \text{ а)} \begin{vmatrix} -2 & 7 & 4 \\ -1 & -3 & 2 \\ -3 & 7 & 5 \end{vmatrix};$$

$$1.15 \text{ а)} \begin{vmatrix} 5 & 2 & 3 \\ 2 & 3 & -2 \\ 1 & 1 & -2 \end{vmatrix};$$

$$\text{б)} \begin{vmatrix} 1 & 4 & 3 & 1 \\ 13 & 19 & 6 & 9 \\ 6 & 17 & 11 & 3 \\ 3 & 6 & 3 & 2 \end{vmatrix}.$$

$$\text{б)} \begin{vmatrix} -6 & 10 & -7 & -2 \\ 4 & -2 & 2 & -2 \\ 2 & -4 & 5 & -3 \\ -8 & 7 & -4 & -1 \end{vmatrix}.$$

$$\text{б)} \begin{vmatrix} -2 & 10 & 5 & 4 \\ -2 & -2 & 3 & 2 \\ -3 & 4 & -2 & -8 \\ -1 & 7 & 6 & 1 \end{vmatrix}.$$

$$1.16 \text{ a)} \begin{vmatrix} -2 & -5 & -1 \\ 2 & -5 & 9 \\ 3 & -1 & 5 \end{vmatrix};$$

$$\text{б)} \begin{vmatrix} -2 & -5 & -1 & 6 \\ 4 & -5 & 9 & 2 \\ 3 & -1 & -5 & 5 \\ -1 & 9 & 5 & 7 \end{vmatrix}$$

$$1.17 \text{ a)} \begin{vmatrix} 2 & 18 & -7 \\ 3 & -1 & 5 \\ 2 & -5 & 9 \end{vmatrix};$$

$$\text{б)} \begin{vmatrix} -2 & 5 & 4 & 4 \\ -2 & 7 & 3 & 5 \\ -4 & -2 & 5 & -2 \\ -6 & 4 & 5 & 2 \end{vmatrix}$$

$$1.18 \text{ a)} \begin{vmatrix} 3 & -1 & -5 \\ 1 & 9 & -5 \\ -5 & 5 & -1 \end{vmatrix};$$

$$\text{б)} \begin{vmatrix} -2 & 7 & 3 & 5 \\ -4 & -2 & 5 & -2 \\ -6 & 4 & 5 & 2 \\ -3 & 3 & 2 & 1 \end{vmatrix}$$

$$1.19 \text{ a)} \begin{vmatrix} 3 & 2 & 3 \\ -1 & 18 & 9 \\ 5 & -7 & -5 \end{vmatrix};$$

$$\text{б)} \begin{vmatrix} 0 & 5 & 4 & 4 \\ -1 & 7 & 3 & 5 \\ -4 & -2 & 5 & -2 \\ 4 & 4 & 5 & 2 \end{vmatrix}$$

$$1.20 \text{ a)} \begin{vmatrix} -10 & -5 & 1 \\ -7 & 5 & 9 \\ 18 & -1 & -5 \end{vmatrix};$$

$$\text{б)} \begin{vmatrix} 4 & 5 & 2 & -4 \\ 3 & 2 & 1 & -2 \\ -2 & 5 & 4 & 4 \\ -4 & -2 & 5 & -2 \end{vmatrix}$$

$$1.21 \text{ a)} \begin{vmatrix} -17 & 7 & -1 \\ 30 & -15 & -6 \\ 7 & 1 & 5 \end{vmatrix};$$

$$\text{б)} \begin{vmatrix} 7 & 3 & 5 & -1 \\ -3 & 3 & 2 & 1 \\ -2 & 5 & 4 & 4 \\ -6 & 4 & 5 & 2 \end{vmatrix}$$

$$1.22 \text{ a)} \begin{vmatrix} -1 & 3 & 3 \\ -2 & 1 & 2 \\ 0 & 3 & -1 \end{vmatrix};$$

$$\text{б)} \begin{vmatrix} 9 & 7 & 5 & -2 \\ 10 & -3 & 7 & 2 \\ 5 & 7 & -2 & -3 \\ 9 & -2 & 4 & -1 \end{vmatrix}$$

$$1.23 \text{ a)} \begin{vmatrix} 4 & 5 & 2 \\ 3 & 2 & 1 \\ -2 & 7 & 3 \end{vmatrix};$$

$$\text{б)} \begin{vmatrix} 13 & 3 & 5 & 4 \\ 22 & -2 & -3 & 3 \\ 13 & 3 & -2 & 5 \\ 21 & -2 & 6 & 5 \end{vmatrix}$$

$$1.24 \text{ a)} \begin{vmatrix} 4 & 4 & -2 \\ 3 & 5 & -4 \\ 5 & -2 & -3 \end{vmatrix};$$

$$\text{б)} \begin{vmatrix} -17 & 4 & 10 & 3 \\ 3 & 2 & -2 & 4 \\ 6 & 5 & -4 & -2 \\ 17 & 2 & 7 & 7 \end{vmatrix}$$

$$1.25 \text{ a)} \begin{vmatrix} 2 & 1 & -2 \\ 5 & 2 & -4 \\ 3 & 5 & -1 \end{vmatrix};$$

$$\text{б)} \begin{vmatrix} 9 & -4 & 5 & -3 \\ 15 & -2 & -6 & 3 \\ 9 & 7 & 10 & 2 \\ 15 & 4 & -7 & 1 \end{vmatrix}$$

$$1.26 \text{ a)} \begin{vmatrix} 7 & 5 & 2 \\ 5 & 9 & 13 \\ -3 & 3 & 2 \end{vmatrix};$$

$$\text{б)} \begin{vmatrix} 4 & -2 & -2 & -3 \\ 3 & -3 & 4 & -2 \\ 2 & -2 & -4 & 5 \\ 1 & 6 & -8 & 7 \end{vmatrix}$$

$$1.27 \text{ a)} \begin{vmatrix} -2 & 7 & 4 \\ -1 & -4 & 2 \\ 9 & -3 & 4 \end{vmatrix};$$

$$\text{б)} \begin{vmatrix} 1 & 13 & 1 & 2 \\ 13 & -20 & 3 & 18 \\ 6 & -13 & 3 & -7 \\ 3 & 24 & 1 & -10 \end{vmatrix}$$

$$1.28 \text{ a)} \begin{vmatrix} -5 & 9 & 1 \\ 18 & -7 & -10 \\ 2 & 2 & 3 \end{vmatrix};$$

$$\text{б)} \begin{vmatrix} 13 & 9 & 1 & 0 \\ 14 & 9 & 1 & 1 \\ 15 & 13 & 1 & 2 \\ 16 & -17 & -1 & 3 \end{vmatrix}$$

$$1.29 \text{ a)} \begin{vmatrix} 1 & 4 & 3 \\ 13 & 19 & 6 \\ 6 & 17 & 11 \end{vmatrix};$$

$$\text{б)} \begin{vmatrix} 3 & 4 & 1 & 9 \\ 6 & -3 & -2 & 15 \\ -11 & 2 & 3 & 21 \\ 3 & 1 & 4 & 17 \end{vmatrix}$$

$$1.30 \text{ a)} \begin{vmatrix} 4 & 3 & 1 \\ 19 & 6 & 9 \\ 17 & 11 & 3 \end{vmatrix};$$

$$\text{б)} \begin{vmatrix} 13 & 19 & 6 & 9 \\ 18 & 18 & -23 & 22 \\ 5 & 6 & 7 & 7 \\ -9 & 15 & 21 & 17 \end{vmatrix}$$

2. НАЙТИ ВСЕ ЗНАЧЕНИЯ ВЫРАЖЕНИЯ  $2A+3AB-7B+4$ , если

$$A = \begin{pmatrix} 1 & 2 & 2 \\ 2 & 3 & 4 \\ 1 & 3 & 2 \end{pmatrix}, \quad B = \begin{pmatrix} k_1 & 2 & -1 \\ -1 & k_2 & 3 \\ -2 & 4 & k_3 \end{pmatrix}.$$

Вариант	k <sub>1</sub>	k <sub>2</sub>	k <sub>3</sub>	Вариант	k <sub>1</sub>	k <sub>2</sub>	k <sub>3</sub>
1	-5	7	-3	16	-2	7	3
2	2	5	-3	17	1	5	3
3	-2	3	1	18	2	3	4
4	4	3	-3	19	3	1	2
5	2	3	-2	20	2	5	3
6	4	-4	-3	21	1	2	7
7	-1	-2	3	22	-3	-4	4
8	2	-4	1	23	3	3	-4
9	3	-5	2	24	5	4	2
10	5	2	-3	25	3	-4	2
11	1	3	-1	26	3	2	5
12	2	2	-1	27	-1	0	4
13	3	-4	5	28	0	-1	2
14	2	-3	1	29	2	1	0
15	3	4	3	30	-3	2	-1

3. Дана матрица A. Найти матрицу  $A^{-1}$  и установить, что  $AA^{-1} = E$ .

3.1  $\begin{pmatrix} 2 & 2 & 3 \\ 1 & -1 & 0 \\ -1 & 2 & 1 \end{pmatrix};$

3.5  $\begin{pmatrix} 1 & 0 & 1 \\ 0 & 1 & 2 \\ 1 & 2 & 4 \end{pmatrix};$

3.9  $\begin{pmatrix} 4 & 2 & -1 \\ 5 & 3 & -2 \\ 3 & 2 & -1 \end{pmatrix};$

3.2  $\begin{pmatrix} 4 & 2 & 3 \\ 1 & 1 & 0 \\ 3 & 2 & 2 \end{pmatrix};$

3.6  $\begin{pmatrix} 17 & 10 & 4 \\ 1 & 1 & 0 \\ 2 & -3 & 3 \end{pmatrix};$

3.10  $\begin{pmatrix} 1 & 2 & -3 \\ 3 & 2 & -4 \\ 2 & -1 & 0 \end{pmatrix};$

3.3  $\begin{pmatrix} 2 & 1 & 1 \\ 4 & 6 & 5 \\ 3 & 5 & 4 \end{pmatrix};$

3.7  $\begin{pmatrix} 3 & 3 & 2 \\ 4 & 3 & 2 \\ 2 & 2 & 1 \end{pmatrix};$

3.11  $\begin{pmatrix} 5 & 3 & 1 \\ 1 & -5 & -2 \\ -5 & 2 & 1 \end{pmatrix};$

3.4  $\begin{pmatrix} 2 & 3 & 4 \\ 1 & 2 & 3 \\ 1 & 3 & 6 \end{pmatrix};$

3.8  $\begin{pmatrix} 2 & 1 & 4 \\ 3 & 2 & 4 \\ 2 & 1 & 3 \end{pmatrix};$

3.12  $\begin{pmatrix} 2 & -3 & 1 \\ 4 & -5 & 2 \\ 5 & -7 & 3 \end{pmatrix};$

$$3.13 \begin{pmatrix} 2 & 6 & 3 \\ 3 & 2 & 3 \\ 4 & 3 & 4 \end{pmatrix};$$

$$3.14 \begin{pmatrix} 3 & -1 & 2 \\ 4 & -3 & 3 \\ 3 & 0 & 2 \end{pmatrix};$$

$$3.15 \begin{pmatrix} 4 & 3 & -3 \\ 2 & 3 & -2 \\ 5 & 5 & -4 \end{pmatrix};$$

$$3.16 \begin{pmatrix} 2 & 2 & 7 \\ -3 & -2 & 5 \\ 4 & 3 & -1 \end{pmatrix};$$

$$3.17 \begin{pmatrix} 6 & -3 & 4 \\ 4 & 4 & -3 \\ 1 & -4 & 4 \end{pmatrix};$$

$$3.18 \begin{pmatrix} 3 & 4 & 4 \\ -2 & 4 & 3 \\ 4 & 5 & 5 \end{pmatrix};$$

$$3.19 \begin{pmatrix} 2 & 3 & 2 \\ 2 & 4 & 1 \\ 3 & 2 & 6 \end{pmatrix};$$

$$3.20 \begin{pmatrix} 6 & 5 & 5 \\ 2 & 6 & 7 \\ -3 & 2 & 3 \end{pmatrix};$$

$$3.21 \begin{pmatrix} 4 & 5 & 5 \\ 4 & 5 & 4 \\ 3 & 4 & 5 \end{pmatrix};$$

$$3.22 \begin{pmatrix} 2 & -1 & 3 \\ 0 & -2 & 4 \\ 2 & -3 & 0 \end{pmatrix};$$

$$3.23 \begin{pmatrix} 2 & 3 & 1 \\ 4 & 3 & -2 \\ 2 & 4 & 1 \end{pmatrix};$$

$$3.24 \begin{pmatrix} -2 & 4 & 5 \\ 1 & 2 & 4 \\ -3 & 1 & 2 \end{pmatrix};$$

$$3.25 \begin{pmatrix} 4 & 2 & 1 \\ 1 & 0 & 4 \\ 3 & 4 & 3 \end{pmatrix};$$

$$3.26 \begin{pmatrix} 1 & 2 & 6 \\ 3 & -1 & -3 \\ 4 & 5 & 5 \end{pmatrix};$$

$$3.27 \begin{pmatrix} 1 & -1 & 2 \\ 0 & 2 & -1 \\ 1 & 0 & 1 \end{pmatrix};$$

$$3.28 \begin{pmatrix} 4 & -1 & 2 \\ 1 & 1 & -2 \\ 0 & -1 & 3 \end{pmatrix};$$

$$3.29 \begin{pmatrix} 1 & 5 & 1 \\ 3 & 2 & 1 \\ 6 & -2 & 1 \end{pmatrix};$$

$$3.30 \begin{pmatrix} 5 & 2 & 5 \\ 3 & 5 & -3 \\ -2 & -4 & 3 \end{pmatrix}.$$

4. Решить системы по формулам Крамера, матричным методом и методом Жордана–Гаусса.

$$1. \begin{cases} 6x_1 - 2x_2 + 2x_3 = -6 \\ -2x_1 + 5x_2 - x_3 = -2 \\ 2x_1 + 2x_2 + 3x_3 = -5 \end{cases}$$

$$2. \begin{cases} 3x_1 + x_2 + x_3 = 6 \\ x_1 + 2x_2 + 3x_3 = 4 \\ -2x_1 + 5x_2 - 2x_3 = -8 \end{cases}$$

$$3. \begin{cases} x_1 - 3x_2 - x_3 = 1 \\ -x_1 + x_2 + x_3 = 0 \\ 2x_1 - x_2 - x_3 = 1 \end{cases}$$

$$4. \begin{cases} 3x_1 - 4x_2 + x_3 = 7 \\ -4x_1 + x_2 + 4x_3 = -14 \\ x_1 + 4x_2 - x_3 = 12 \end{cases}$$

$$5. \begin{cases} x_1 + x_2 + x_3 = -3 \\ x_1 + x_2 - x_3 = 1 \\ x_1 - x_2 - x_3 = -1 \end{cases}$$

$$6. \begin{cases} 3x_1 - 2x_2 + 2x_3 = 3 \\ -2x_1 + 4x_2 + x_3 = 1 \\ 2x_1 + 3x_2 + 2x_3 = 10 \end{cases}$$

$$7. \begin{cases} 6x_1 - 12x_2 - x_3 = -14 \\ x_1 - 3x_2 - x_3 = -6 \\ -4x_1 + 12x_2 - 3x_3 = 10 \end{cases}$$

$$8. \begin{cases} 6x_1 + x_2 - x_3 = 17 \\ 2x_1 + 5x_2 - 2x_3 = 7 \\ x_1 - x_2 + 4x_3 = 10 \end{cases}$$

$$9. \begin{cases} 3x_1 + x_2 - 5x_3 = 12 \\ -3x_1 + x_2 + x_3 = -6 \\ -4x_1 + 3x_2 - 4x_3 = -5 \end{cases}$$

$$10. \begin{cases} x_1 + 2x_2 + x_3 = 17 \\ 9x_1 + x_2 + 2x_3 = 30 \\ 2x_1 - x_2 + 3x_3 = 7 \end{cases}$$

$$11. \begin{cases} -x_1 + 3x_2 + x_3 = 2 \\ 7x_1 + 2x_2 + 4x_3 = 33 \\ 5x_1 + x_2 + 2x_3 = 24 \end{cases}$$

$$12. \begin{cases} 6x_1 - 3x_2 + 5x_3 = 27 \\ x_1 + 3x_2 + 5x_3 = 10 \\ -2x_1 + 4x_2 - 3x_3 = -19 \end{cases}$$

$$13. \begin{cases} 8x_1 - x_2 - 5x_3 = 53 \\ -2x_1 + 3x_2 + x_3 = -15 \\ 4x_1 - x_2 - x_3 = 21 \end{cases}$$

$$14. \begin{cases} x_1 + 3x_2 - x_3 = 3 \\ 4x_1 - 2x_2 + x_3 = -1 \\ 3x_1 - 2x_2 + 4x_3 = 8 \end{cases}$$

$$15. \begin{cases} x_1 - 3x_2 + 4x_3 = -1 \\ 4x_1 - 7x_2 + 8x_3 = -6 \\ 6x_1 - 7x_2 + 7x_3 = -11 \end{cases}$$

$$16. \begin{cases} 11x_1 + 2x_2 - 8x_3 = -27 \\ 2x_1 + 2x_2 + 10x_3 = 54 \\ -8x_1 + 10x_2 + 5x_3 = 27 \end{cases}$$

$$17. \begin{cases} -2x_1 - 2x_2 - 4x_3 = -20 \\ -2x_1 + x_2 - 2x_3 = -11 \\ 5x_1 + 2x_2 + 7x_3 = 38 \end{cases}$$

$$18. \begin{cases} -3x_1 + 4x_2 - 2x_3 = -10 \\ -6x_1 - 6x_2 + 5x_3 = -48 \\ x_1 + 2x_2 + x_3 = 10 \end{cases}$$

$$19. \begin{cases} 3x_1 + 2x_2 - 2x_3 = 6 \\ 6x_1 + 9x_2 + 6x_3 = 12 \\ 2x_1 - 2x_2 + 5x_3 = 17 \end{cases}$$

$$20. \begin{cases} 6x_1 + 2x_2 + 2x_3 = 6 \\ 2x_1 + 3x_2 - 4x_3 = 9 \\ 2x_1 - 4x_2 + 3x_3 = -5 \end{cases}$$

$$21. \begin{cases} 11x_1 + 2x_2 - 8x_3 = -9 \\ 2x_1 + 2x_2 + 10x_3 = 36 \\ -8x_1 + 10x_2 + 5x_3 = 27 \end{cases}$$

$$22. \begin{cases} -2x_1 - 2x_2 + x_3 = -3 \\ 3x_1 + 2x_2 - x_3 = 4 \\ x_1 + 2x_2 + x_3 = 4 \end{cases}$$

$$23. \begin{cases} 2x_1 - x_2 + 2x_3 = 12 \\ 5x_1 - 3x_2 + 3x_3 = 18 \\ -x_1 - 2x_2 + x_3 = -6 \end{cases}$$

$$24. \begin{cases} 3x_1 + 7x_2 + 9x_3 = 28 \\ x_1 + x_2 - x_3 = 0 \\ x_1 + 13x_2 + x_3 = 16 \end{cases}$$

$$25. \begin{cases} 2x_1 + x_2 - x_3 = 0 \\ x_1 - 3x_2 - x_3 = -2 \\ x_1 + 2x_2 + 2x_3 = -6 \end{cases}$$

$$26. \begin{cases} 2x_1 - 2x_2 + 5x_3 = 24 \\ x_1 - x_2 + 2x_3 = 11 \\ -2x_1 + 6x_2 - 2x_3 = -34 \end{cases}$$

$$27. \begin{cases} 2x_1 - 10x_2 + 2x_3 = -8 \\ x_1 + 8x_2 + 2x_3 = 22 \\ 8x_1 + 5x_2 - 10x_3 = 58 \end{cases}$$

$$28. \begin{cases} -2x_1 + 3x_2 + 4x_3 = -11 \\ -6x_1 + 7x_2 + 6x_3 = -25 \\ x_1 - x_2 + x_3 = 2 \end{cases}$$

$$29. \begin{cases} 3x_1 - x_2 + x_3 = 6 \\ -x_1 + 5x_2 - x_3 = 0 \\ x_1 - x_2 + 3x_3 = 12 \end{cases}$$

$$30. \begin{cases} 2x_1 - x_2 + x_3 = 6 \\ x_1 + 2x_2 - x_3 = 6 \\ x_1 - x_2 + 2x_3 = 6 \end{cases}$$