

1. vyriešte dané sústavy rovníc (pomocou matice a determinantu)

a. $x - 2y + 2z = -9$
 $3x + 5y + 4z = 10$
 $5x + 12y + 6z = 29$

b. $x_1 + 4x_2 - 3x_3 = 0$
 $x_1 - 3x_2 - x_3 = 0$
 $2x_1 + x_2 - 4x_3 = 0$

c. $3x_1 - 2x_2 + x_3 = 11$
 $x_1 + x_2 - 3x_3 = 7$
 $11x_1 - 4x_2 - 3x_3 = 10$

d. $2x_1 - 3x_2 + x_3 = 0$
 $x_1 + 2x_2 - x_3 = 3$
 $2x_1 + x_2 + x_3 = 12$

e. $3x + 2y - z = 8$
 $-x + 3y + 2z = 3$
 $2x - y + 4z = -4$

k. $x - y - z = -1$
 $x + y - z = 3$
 $x - y + z = 5$

l. $x + 3y = 20,$
 $-3y + 2z = 0,$
 $-2x + z = -10$

f. $1/2x - y + 3/2z - 7 = 0$
 $3/2x + 1/2y - z - 8 = 0$
 $-2/3x + y + 1/3z - 10 = 0$

g. $6x_1 + 3x_2 - 2x_3 = 2$
 $x_1 - 3x_2 + 2x_3 = 5$
 $2x_1 + x_2 + x_3 = 9$

h. $x_1 + 2x_2 - 3x_3 = -5$
 $3x_1 - 4x_2 + 5x_3 = 10$
 $2x_1 + 5x_2 - 7x_3 = -9$

i. $x_1 + 2x_2 + x_3 = 3$
 $2x_1 - 3x_2 + x_3 = 2$
 $3x_1 + x_2 + 3x_3 = 4$

j. $2x_1 + 3x_2 + 5x_3 = 11$
 $x_1 - 5x_2 - 2x_3 = 5$
 $3x_1 + 6x_2 + 4x_3 = 3$

$$x_1 + 2x_2 + 3x_3 = 4$$

m. $2x_1 + x_2 - x_3 = 3$
 $3x_1 + 3x_2 + 2x_3 = 10$

$$x_1 + 2x_2 - 3x_3 = -7$$

n. $3x_1 + 2x_2 - 4x_3 = -7$
 $2x_1 - x_2 = 3$

riešenie

a. $11 \cdot x_1 + 18 \cdot x_3 = -25$ $11 \cdot x_2 - 2 \cdot x_3 = 37$

b. $7 \cdot x_1 - 13 \cdot x_3 = 0$ $7 \cdot x_2 - 2 \cdot x_3 = 0$

c. nemá riešenie

d. $x_1 = 2$ $x_2 = 3$ $x_3 = 5$

e. $x_1 = 1$ $x_2 = 2$ $x_3 = -1$

f. $x_1 = 8$ $x_2 = 10$ $x_3 = 12$

g. $x_1 = 1$ $x_2 = 2$ $x_3 = 5$

h. $x_1 = 7/4$ $x_2 = 39/4$ $x_3 = 35/4$

i. $x_1 = 4$ $x_2 = 1$ $x_3 = -3$

j. $x_1 = 1$ $x_2 = -2$ $x_3 = 3$

k. $x = 4, y = 2, z = 3$

l. $x = 8, y = 4, z = 6$

m. nema riešenie

n. $(X = (1, -1, 2))$

2. vyriešte dané sústavy rovníc pomocou substitúcie (nezabudnite podmienky)

a.

$$\frac{1}{x+y} + \frac{1}{x-y} = \frac{3}{2}$$

$$\frac{1}{x+y} - \frac{1}{x-y} = \frac{1}{2}$$

b.

$$\frac{4}{x} - \frac{3}{y} = 1$$

$$\frac{2}{x} - \frac{3}{z} = 4$$

$$\frac{3}{y} - \frac{1}{z} = 0$$

c.

$$\frac{6}{x+y} + \frac{5}{y+3z} = 2$$

$$\frac{15}{x+y} - \frac{4}{x-2z} = \frac{1}{2}$$

$$\frac{10}{y+3z} - \frac{7}{x-2z} = -\frac{3}{2}$$

d. $\frac{3x}{x-1} + 2\frac{y}{y+1} = 7$

$$\frac{4x}{x-1} - \frac{y}{y+1} = 7 \quad (\text{nemá riešenie, nezabudnite podmienky})$$

e.

$$\frac{12}{\sqrt{x-1}} + \frac{5}{\sqrt{y+\frac{1}{4}}} = 5 \wedge \frac{8}{\sqrt{x-1}} + \frac{10}{\sqrt{y+\frac{1}{4}}} = 6$$

f. $\frac{1}{x+y} + \frac{1}{x-y} = \frac{3}{2}$

$$\frac{1}{x+y} - \frac{1}{x-y} = \frac{1}{2}$$

g. $\frac{3}{x-1} + \frac{16}{y+3} = -1$

$$\frac{6}{x-1} + \frac{88}{y+3} = 5$$

h. $\frac{4}{x+2} = \frac{1}{y-2}$

$$\frac{1}{x-1} = \frac{5}{y+2}$$

i. $\frac{1}{y} + \frac{5}{a} = \frac{2}{3}$

$$\frac{2}{y} + \frac{3}{a} = \frac{19}{30}$$

$(a = 10, y = 6)$

3. vyriešte dané sústavy dvoch rovníc 3 neznámych

a. $3x + y - 2z = 8$

$-6x - 2y + 4z = 16$

b. $2x - 3y - z = 5$

$x + 2y + z = -1$

4. nájdite priesečnicu daných rovín

a. $x + 2y - 3z = 5$

$3x - 4y + 5z = 6$

b. $x + y + z + 1 = 0$

$x - 5y - 4z + 3 = 0$.