

Vypočítaj determinant matice M:

DU - první sloupec, obe stránky

a) $M = \begin{pmatrix} 1 & -1 \\ -2 & 1 \end{pmatrix}$

g) $M = \begin{pmatrix} 3 & 4 \\ 2 & -5 \end{pmatrix}$

m) $M = \begin{pmatrix} 0 & -2 \\ 6 & 30 \end{pmatrix}$

b) $M = \begin{pmatrix} 15 & 10 \\ 3 & 2 \end{pmatrix}$

h) $M = \begin{pmatrix} 17 & -11 \\ 6 & -3 \end{pmatrix}$

n) $M = \begin{pmatrix} -27 & 54 \\ 24 & -13 \end{pmatrix}$

c) $M = \begin{pmatrix} 2 & 3 & 1 \\ -1 & 2 & 3 \\ 3 & 2 & -1 \end{pmatrix}$

i) $M = \begin{pmatrix} 1 & 1 & 2 \\ 2 & 3 & 1 \\ 3 & 4 & -5 \end{pmatrix}$

o) $M = \begin{pmatrix} 1 & 2 & 4 \\ 2 & 7 & 3 \\ 3 & 1 & -5 \end{pmatrix}$

d) $M = \begin{pmatrix} 1 & -6 & 5 \\ 2 & 2 & 5 \\ -1 & -4 & 1 \end{pmatrix}$

j) $M = \begin{pmatrix} 15 & 4 & 8 \\ -12 & -7 & 5 \\ 0 & -5 & 15 \end{pmatrix}$

p) $M = \begin{pmatrix} -2 & 5 & 8 \\ -7 & 1 & 12 \\ -6 & 5 & 17 \end{pmatrix}$

e) $M = \begin{pmatrix} 1 & 2 & 3 & 4 \\ -2 & 1 & -4 & 3 \\ 3 & -4 & -1 & 2 \\ 4 & 3 & -2 & -1 \end{pmatrix}$

k) $M = \begin{pmatrix} 1 & 2 & 3 & 3 \\ 2 & 1 & 1 & 1 \\ 3 & 6 & 5 & 4 \\ 3 & 3 & 2 & 2 \end{pmatrix}$

r) $M = \begin{pmatrix} 0 & 0 & 3 & 3 \\ 3 & 0 & 1 & 2 \\ 1 & 0 & 2 & 4 \\ 2 & 1 & 3 & 2 \end{pmatrix}$

f) $M = \begin{pmatrix} 2 & 1 & 0 & 4 \\ 1 & 2 & 1 & 4 \\ 0 & 3 & 2 & 2 \\ 2 & 1 & 3 & 3 \end{pmatrix}$

l) $M = \begin{pmatrix} 3 & 3 & 3 & 1 \\ 2 & 4 & 5 & 2 \\ 3 & 4 & 5 & 1 \\ 2 & 2 & 3 & 4 \end{pmatrix}$

s) $M = \begin{pmatrix} 1 & 1 & 1 & 1 \\ 1 & 2 & 3 & 4 \\ 1 & 3 & 6 & 10 \\ 1 & 4 & 10 & 20 \end{pmatrix}$

Výsledky:

a) $|M| = -1$

g) $|M| = -23$

m) $|M| = 12$

b) $|M| = 0$

h) $|M| = 15$

n) $|M| = -945$

c) $|M| = 0$

i) $|M| = -8$

o) $|M| = -76$

d) $|M| = 34$

j) $|M| = 0$

p) $|M| = 89$

e) $|M| = 900$

k) $|M| = 6$

r) $|M| = -15$

f) $|M| = 18$

l) $|M| = 14$

s) $|M| = 1$

Vyrieš rovnicu danú determinantom

$$\text{a)} \quad \begin{vmatrix} 6 & 2 \\ 3 & x \end{vmatrix} = 0$$

$$\text{f)} \quad \begin{vmatrix} x-1 & 4 \\ 1 & x+2 \end{vmatrix} = 0$$

$$\text{k)} \quad \begin{vmatrix} x^2+1 & x \\ x(x-3) & x-2 \end{vmatrix} = 0$$

$$\text{b)} \quad \begin{vmatrix} x-1 & x & x+2 \\ 1 & 2 & 1 \\ 1 & x & 2 \end{vmatrix} = 0$$

$$\text{g)} \quad \begin{vmatrix} 3 & 4 & 5 \\ 7 & 7 & 7 \\ x & x+1 & 9 \end{vmatrix} = 0$$

$$\text{l)} \quad \begin{vmatrix} x & 1 & x+1 \\ 2 & x & 3 \\ x+1 & 4 & x \end{vmatrix} = -2x^2 + 11$$

$$\text{c)} \quad \begin{vmatrix} 8 & 6 & 4 \\ x & 5 & 5 \\ 7 & x & x-2 \end{vmatrix} = 0$$

$$\text{h)} \quad \begin{vmatrix} 7 & 7 & x+2 \\ 4 & x & x-3 \\ 5 & 5 & 7 \end{vmatrix} = 0$$

$$\text{m)} \quad \begin{vmatrix} x & 4 & 5 \\ 3 & -1 & x \\ 3 & x & -1 \end{vmatrix} = 0$$

$$\text{d)} \quad \begin{vmatrix} 2 & x & 1 \\ x & 2 & 1 \\ 3 & 4 & x \end{vmatrix} = 0$$

$$\text{i)} \quad \begin{vmatrix} 5 & x & 3 \\ x & 3 & 4 \\ -2 & -2 & x \end{vmatrix} = 58$$

$$\text{n)} \quad \begin{vmatrix} 4 & x & 6 \\ 0 & 1 & x-5 \\ x & 2 & 5 \end{vmatrix} = 0$$

$$\text{e)} \quad \begin{vmatrix} 3 & x+7 & 5 \\ 1 & 2 & x \\ -x & 5 & 6 \end{vmatrix} = 0$$

$$\text{j)} \quad \begin{vmatrix} 6-\lambda & 5 \\ 6 & 5-\lambda \end{vmatrix} = 0$$

$$\text{o)} \quad \begin{vmatrix} 4-\lambda & 1 & 0 \\ 2 & 6-\lambda & 1 \\ 0 & 1 & 4-\lambda \end{vmatrix} = 0$$

Výsledky

$$\text{a)} \quad x = 1$$

$$\text{f)} \quad x_1 = -3; \quad x_2 = 2$$

$$\text{k)} \quad x_1 = -2; \quad x_2 = 1$$

$$\text{b)} \quad x = 2$$

$$\text{g)} \quad x = 7$$

$$\text{l)} \quad x = 0$$

$$\text{c)} \quad x_1 = 1; \quad x_2 = 5$$

$$\text{h)} \quad x_1 = 4; \quad x_2 = \frac{39}{5}$$

$$\text{m)} \quad x_1 = -1; \quad x_{2,3} = \frac{1 \pm \sqrt{109}}{2}$$

$$\text{d)} \quad x_1 = 2; \quad x_{2,3} = -1 \pm 2\sqrt{2}$$

$$\text{i)} \quad x_1 = 0; \quad x_{2,3} = \pm 1$$

$$\text{n)} \quad x_1 = 3; \quad x_{2,3} = 1 \pm \sqrt{21}$$

$$\text{e)} \quad x = 1$$

$$\text{j)} \quad \lambda_1 = 0; \quad \lambda_2 = 11$$

$$\text{o)} \quad \lambda_1 = 3; \quad \lambda_2 = 4; \quad \lambda_3 = 7$$