

4. V – M – Soustavy lineárních rovnic

0) Nejprve si procvičte výpočty několika samostatných lineárních rovnic s jednou neznámou:

a) $4x - 25 = 3x - 13$

b) $-5x + 1 = 2x - 20$

c) $3(x - 4) + 7 = -5x - 18$

d) $-4[x + 2(5 - x)] - 1 = 2x + 16$

e) $\frac{7}{3}x - \frac{2}{6}x + 4 = x + \frac{3}{5}$

f) $\frac{9}{6} \cdot (3x - 2) + 1 = 4 - 3x$

g) $\frac{6x - 4}{8} - 2x = 5 + \frac{x}{2}$

h) $\frac{3 + 2x}{6} - \frac{x}{3} + 2 = 3x - \frac{5}{2}$

i) $\frac{x^2 - 5}{4} + 3x - 2 = \frac{-3 + 2x^2}{8} - x + 1$

j) $\frac{6}{8} - 4x^2 - 3x + \frac{2}{10} = -\frac{2}{3}x - \frac{12x^2}{15}$

1) Řešte danou soustavu lineárních rovnic metodou porovnávací:

a)
$$\begin{array}{rclcrcl} 3x & - & 9y & = & -54 \\ -9x & - & 10y & = & -97 \end{array}$$

b)
$$\begin{array}{rclcrcl} -4x & - & 4y & = & 72 \\ x & + & 8y & = & -74 \end{array}$$

c)
$$\begin{array}{rclcrcl} -8x & + & 8y & = & -40 \\ 10x & + & 3y & = & 89 \end{array}$$

e)
$$\begin{array}{rclcrcl} 4x & + & 6y & = & -4 \\ -5x & + & 8y & = & 36 \end{array}$$

g)
$$\begin{array}{rclcrcl} 3x & + & 9y & = & 69 \\ 4x & + & 3y & = & 47 \end{array}$$

i)
$$\begin{array}{rclcrcl} -2x & - & 10y & = & -68 \\ -3x & - & 9y & = & -66 \end{array}$$

$$\begin{array}{rclcrcl} 9x & - & 7y & = & -65 & /+7y; :9 \\ x & - & 9y & = & -73 & /+9y \end{array}$$

$$x = \frac{-65 + 7y}{9}; x = -73 + 9y$$

$$\frac{-65 + 7y}{9} = -73 + 9y \quad / \cdot 9$$

$$-65 + 7y = -657 + 81y \Rightarrow 74y = 692 \Rightarrow \underline{\underline{y = 8}}$$

$$x = -73 + 9 \cdot 8 \Rightarrow \underline{\underline{x = -1}}$$

d)
$$\begin{array}{rclcrcl} 2x & + & 4y & = & 14 \\ -6x & - & 7y & = & -12 \end{array}$$

f)
$$\begin{array}{rclcrcl} -8x & - & 7y & = & -15 \\ 4x & + & 6y & = & 10 \end{array}$$

h)
$$\begin{array}{rclcrcl} -6x & - & 2y & = & -28 \\ 5x & - & y & = & 10 \end{array}$$

j)
$$\begin{array}{rclcrcl} -x & - & y & = & -15 \\ -2x & - & 9y & = & -93 \end{array}$$

4. V – M – Soustavy lineárních rovnic

2) Řešte danou soustavu lineárních rovnic metodou dosazovací:

$$\begin{array}{rclcrcl} \text{a)} & -10x & - & 4y & = & -72 \\ & -3x & - & 10y & = & -92 \end{array}$$

$$\begin{array}{rclcrcl} \text{b)} & -8x & + & 7y & = & 127 \\ & 5x & - & 4y & = & -76 \end{array}$$

$$\begin{array}{rclcrcl} \text{c)} & 5x & + & 2y & = & -42 \\ & 5x & - & 4y & = & -66 \end{array}$$

$$\begin{array}{rclcrcl} \text{e)} & 7x & - & 2y & = & 1 \\ & 4x & + & 8y & = & -36 \end{array}$$

$$\begin{array}{rclcrcl} \text{g)} & -9x & - & 8y & = & -18 \\ & -8x & - & 7y & = & -17 \end{array}$$

$$\begin{array}{rclcrcl} \text{i)} & x & + & 4y & = & -4 \\ & -8x & - & 6y & = & -46 \end{array}$$

$$\begin{array}{rclcrcl} 5x & - & 9y & = & -30 & / + 9y; : 5 \\ 9x & - & 7y & = & -54 \end{array}$$

$$x = \frac{-30 + 9y}{5} \Rightarrow 9 \cdot \frac{-30 + 9y}{5} - 7y = -54$$

$$\frac{-270 + 81y}{5} - 7y = -54 \quad / \cdot 5 \Rightarrow -270 + 81y - 35y = -270$$

$$81y - 35y = 0 \Rightarrow \underline{\underline{y = 0}}$$

$$x = \frac{-30 + 9 \cdot 0}{5} \Rightarrow \underline{\underline{x = -6}}$$

$$\begin{array}{rclcrcl} \text{d)} & 9x & - & 7y & = & -100 \\ & 10x & + & 3y & = & -68 \end{array}$$

$$\begin{array}{rclcrcl} \text{f)} & -10x & - & 7y & = & 129 \\ & -8x & + & 8y & = & 8 \end{array}$$

$$\begin{array}{rclcrcl} \text{h)} & -6x & - & y & = & -54 \\ & -7x & - & 6y & = & -63 \end{array}$$

$$\begin{array}{rclcrcl} \text{j)} & -9x & + & 2y & = & -61 \\ & -3x & - & 8y & = & 49 \end{array}$$

3) Řešte danou soustavu lineárních rovnic metodou sčítací:

$$\begin{array}{rclcrcl} \text{a)} & -7x & - & 4y & = & 13 \\ & 10x & + & 2y & = & -26 \end{array}$$

$$\begin{array}{rclcrcl} \text{b)} & -3x & + & 5y & = & -53 \\ & 6x & - & 2y & = & 26 \end{array}$$

$$\begin{array}{rclcrcl} \text{c)} & 6x & - & 7y & = & 19 \\ & 9x & - & 7y & = & 25 \end{array}$$

$$\begin{array}{rclcrcl} \text{e)} & -2x & - & 7y & = & 8 \\ & -3x & + & 8y & = & -25 \end{array}$$

$$\begin{array}{rclcrcl} -7x & - & 8y & = & 81 \\ 4x & - & 4y & = & -12 & / \cdot (-2) \end{array}$$

$$\left. \begin{array}{rclcrcl} -7x & - & 8y & = & 81 \\ -8x & + & 8y & = & 24 \end{array} \right\} +$$

$$-7x - 8x = 105 \Rightarrow -15x = 105 \Rightarrow \underline{\underline{x = -7}}$$

$$4 \cdot (-7) - 4y = -12 \Rightarrow -4y = 16 \Rightarrow \underline{\underline{y = -4}}$$

$$\begin{array}{rclcrcl} \text{d)} & 6x & + & 10y & = & 80 \\ & -10x & + & 9y & = & -82 \end{array}$$

$$\begin{array}{rclcrcl} \text{f)} & 10x & + & 10y & = & 140 \\ & -x & - & 8y & = & -63 \end{array}$$

4. V – M – Soustavy lineárních rovnic

$$\begin{array}{r} \text{g)} \quad -9x \quad - \quad 6y \quad = \quad 81 \\ \quad \quad 5x \quad + \quad 6y \quad = \quad -61 \end{array}$$

$$\begin{array}{r} \text{h)} \quad 4x \quad + \quad y \quad = \quad 25 \\ \quad \quad -6x \quad - \quad 7y \quad = \quad 1 \end{array}$$

$$\begin{array}{r} \text{i)} \quad -4x \quad + \quad 9y \quad = \quad 49 \\ \quad \quad 9x \quad - \quad 2y \quad = \quad 54 \end{array}$$

$$\begin{array}{r} \text{j)} \quad 2x \quad - \quad 7y \quad = \quad 44 \\ \quad \quad 6x \quad + \quad 6y \quad = \quad 24 \end{array}$$

4) Řešte danou soustavu lineárních rovnic vhodnou metodou:

$$\begin{array}{r} \text{a)} \quad 5x \quad + \quad 9y \quad = \quad -43 \\ \quad \quad 10x \quad - \quad 9y \quad = \quad 103 \end{array}$$

$$\begin{array}{r} \text{b)} \quad -2x \quad - \quad 7y \quad = \quad 27 \\ \quad \quad -4x \quad + \quad y \quad = \quad -21 \end{array}$$

$$\begin{array}{r} \text{c)} \quad 2x \quad + \quad 4y \quad = \quad 28 \\ \quad \quad -4x \quad - \quad 9y \quad = \quad -61 \end{array}$$

$$\begin{array}{r} \text{d)} \quad -2x \quad - \quad 2y \quad = \quad 6 \\ \quad \quad 3x \quad + \quad 10y \quad = \quad -2 \end{array}$$

$$\begin{array}{r} \text{e)} \quad x \quad + \quad 6y \quad = \quad 1 \\ \quad \quad 2x \quad + \quad 5y \quad = \quad 2 \end{array}$$

$$\begin{array}{r} \text{f)} \quad -2x \quad + \quad 6y \quad = \quad 30 \\ \quad \quad 4x \quad + \quad 6y \quad = \quad 66 \end{array}$$

$$\begin{array}{r} \text{g)} \quad -x \quad + \quad 10y \quad = \quad -35 \\ \quad \quad -9x \quad - \quad 4y \quad = \quad -33 \end{array}$$

$$\begin{array}{r} \text{h)} \quad -x \quad - \quad 5y \quad = \quad -16 \\ \quad \quad x \quad - \quad 2y \quad = \quad -5 \end{array}$$

$$\begin{array}{r} \text{i)} \quad -4x \quad - \quad y \quad = \quad -25 \\ \quad \quad -4x \quad + \quad 5y \quad = \quad -43 \end{array}$$

$$\begin{array}{r} \text{j)} \quad 3x \quad - \quad 2y \quad = \quad -14 \\ \quad \quad 5x \quad + \quad 6y \quad = \quad -70 \end{array}$$

$$\begin{array}{r} \text{k)} \quad -5x \quad - \quad 4y \quad = \quad 13 \\ \quad \quad -10x \quad + \quad 3y \quad = \quad 114 \end{array}$$

$$\begin{array}{r} \text{l)} \quad 8x \quad - \quad 5y \quad = \quad -87 \\ \quad \quad -7x \quad + \quad y \quad = \quad 66 \end{array}$$

$$\begin{array}{r} \text{m)} \quad 5x \quad + \quad 5y \quad = \quad -90 \\ \quad \quad -x \quad - \quad 7y \quad = \quad 66 \end{array}$$

$$\begin{array}{r} \text{n)} \quad -10x \quad - \quad 6y \quad = \quad 98 \\ \quad \quad 6x \quad - \quad 9y \quad = \quad -21 \end{array}$$

$$\begin{array}{r} \text{o)} \quad 9x \quad - \quad 7y \quad = \quad 151 \\ \quad \quad -x \quad - \quad 10y \quad = \quad 91 \end{array}$$

$$\begin{array}{r} \text{p)} \quad 5x \quad - \quad 8y \quad = \quad -33 \\ \quad \quad -7x \quad - \quad 6y \quad = \quad 29 \end{array}$$

$$\begin{array}{r} \text{q)} \quad -3x \quad - \quad 7y \quad = \quad -43 \\ \quad \quad x \quad + \quad 6y \quad = \quad 40 \end{array}$$

$$\begin{array}{r} \text{r)} \quad 10x \quad + \quad 10y \quad = \quad -40 \\ \quad \quad -5x \quad + \quad 6y \quad = \quad -90 \end{array}$$

$$\begin{array}{r} \text{s)} \quad -9x \quad - \quad 10y \quad = \quad 37 \\ \quad \quad -x \quad + \quad 8y \quad = \quad -5 \end{array}$$

$$\begin{array}{r} \text{t)} \quad -4x \quad + \quad 10y \quad = \quad -70 \\ \quad \quad -5x \quad - \quad 10y \quad = \quad 25 \end{array}$$
