

Soustavy rovnic

1) Řešte v \mathbb{R} soustavy rovnic a proveďte zkoušky:

a)
$$\begin{array}{l} 4x - y = 2 \\ 2x + y = 4 \end{array}$$

b)
$$\begin{array}{l} r + 2s = -1 \\ 3r - 2s = -11 \end{array}$$

c)
$$\begin{array}{l} a + 2b = 3 \\ -a - 3b = -2 \end{array}$$

d)
$$\begin{array}{l} 3p - 2r = -1 \\ p + 2r = -3 \end{array}$$

2) Řešte v \mathbb{R} soustavy rovnic a proveďte zkoušky:

a)
$$\begin{array}{l} 2u + 5v = 0 \\ u - v = 7 \end{array}$$

b)
$$\begin{array}{l} -4x - 3y = 4 \\ 2x + 5y = 12 \end{array}$$

c)
$$\begin{array}{l} 6x - 5y = 5 \\ x + y = -1 \end{array}$$

d)
$$\begin{array}{l} 4x - y = -3 \\ -12x + 3y = 9 \end{array}$$

3) Řešte v \mathbb{R} soustavy rovnic a proveďte zkoušky:

a)
$$\begin{array}{l} 3x - 2y = 2 \\ 2x + 5y = 14 \end{array}$$

b)
$$\begin{array}{l} 2x + 3y = 11 \\ 3x - 4y = 25 \end{array}$$

c)
$$\begin{array}{l} 4c + 5d = -8 \\ 3c - 4d = 25 \end{array}$$

d)
$$\begin{array}{l} 2x - 3y = 5 \\ -5x + 8y = -14 \end{array}$$

e)
$$\begin{array}{l} 6x - 2y = -6 \\ 9x + 7y = 31 \end{array}$$

f)
$$\begin{array}{l} 10m + 4n = 6 \\ 15m - 6n = 15 \end{array}$$

g)
$$\begin{array}{l} u - 4v = 7 \\ 9v - 2u = -15 \end{array}$$

h)
$$\begin{array}{l} 16a - 12b = -4 \\ 8a + 18b = 18 \end{array}$$

4) Řešte v \mathbb{R} soustavy rovnic a proveďte zkoušky:

a)
$$\begin{array}{l} 3x + 9y = 5 \\ \frac{x}{3} - \frac{y}{2} = -\frac{4}{9} \end{array}$$

b)
$$\begin{array}{l} 4x - 3y = 8 \\ \frac{x}{5} + \frac{y}{15} = -\frac{1}{30} \end{array}$$

c)
$$\begin{array}{l} \frac{x}{3} + \frac{y}{5} = 0 \\ \frac{x}{6} - \frac{y}{2} = \frac{1}{5} \end{array}$$

d)
$$\begin{array}{l} \frac{x}{3} - \frac{y}{2} = -\frac{1}{6} \\ \frac{x}{4} + \frac{y}{6} = \frac{1}{5} \end{array}$$

5) Řešte v \mathbb{R} soustavy rovnic a proveďte zkoušky:

$$\begin{array}{ll} a) \quad \begin{array}{l} 2(x-1) + 3(y-4) = 14 \\ 5(6-x) - 4(y-5) = 1 \end{array} & b) \quad \begin{array}{l} 4(u+2) - 5(v+3) = -1 \\ 7(2-u) - 3(v+5) = 12 \end{array} \end{array}$$

$$\begin{array}{ll} c) \quad \begin{array}{l} 3(r-4) - 3(s+2) = 2 \\ 4(2-r) + 2(2s-7) = 14 \end{array} & d) \quad \begin{array}{l} 2(p+2) - 3(1-2r) = 3 \\ 6(3-p) + 2(2r+5) = 0 \end{array} \end{array}$$

$$\begin{array}{ll} e) \quad \begin{array}{l} 4(2y-1) + 2(3z+4) = -10 \\ 3(4y+5) - 2(3-2z) = 3 \end{array} & f) \quad \begin{array}{l} 3(3s-1) + 2(4t+5) = 7 \\ 5(7-6s) - 3(1-4t) = 3 \end{array} \end{array}$$

$$\begin{array}{ll} g) \quad \begin{array}{l} 5(x+2) - 3(3-2y) = -2 \\ 3(2x-7) + 4(4y+5) = -9 \end{array} & h) \quad \begin{array}{l} 3(3-a) + 5(b+5) = 13 \\ 2(a-3) + 3(1-b) = 10 \end{array} \end{array}$$

6) Řešte v \mathbb{R} soustavy rovnic a proveďte zkoušky:

$$\begin{array}{ll} a) \quad \begin{array}{l} 0,6x + 0,8y = 3,6 \\ 0,9x - 0,5y = 0,3 \end{array} & b) \quad \begin{array}{l} 0,8x + 0,5y = 0,4 \\ 0,1x - 0,3y = -1,4 \end{array} \end{array}$$

$$\begin{array}{ll} c) \quad \begin{array}{l} 0,6x + 1,5y = 3,6 \\ \frac{1}{5}x + \frac{1}{2}y = 1 \end{array} & d) \quad \begin{array}{l} 0,4x + 0,5y = 1,5 \\ \frac{1}{5}x + \frac{1}{4}y = \frac{3}{4} \end{array} \end{array}$$

7) Řešte v \mathbb{R} soustavy rovnic a proveďte zkoušky:

$$\begin{array}{ll} a) \quad \begin{array}{l} x - 4y = 1 \\ \frac{x+2y}{4} - \frac{2x-6y}{3} = 0 \end{array} & b) \quad \begin{array}{l} 5x + 8y = 1 \\ \frac{x+2y}{3} - \frac{3x-4y}{9} = \frac{5}{6} \end{array} \end{array}$$
$$\begin{array}{ll} c) \quad \begin{array}{l} \frac{x+7y}{4} - \frac{3x+8y}{3} = 1 \\ \frac{3x+4y}{3} - \frac{4x-5y}{7} = 4 \end{array} & d) \quad \begin{array}{l} \frac{x+3y}{7} - \frac{2x+y}{2} = -3 \\ \frac{5x-4y}{11} - \frac{6x+5y}{6} = 5 \end{array} \end{array}$$

8) Řešte v \mathbb{R} soustavy rovnic a proveďte zkoušky:

$$\begin{array}{ll} a) \quad \begin{array}{l} \frac{2r-5}{15} + \frac{3s+20}{10} = 25 \\ \frac{s-10}{5} - \frac{r-10}{6} = 5 \end{array} & b) \quad \begin{array}{l} 2u - \frac{v}{3} = \frac{1}{2} \\ \frac{u}{2} + \frac{v}{4} = 1\frac{1}{8} \end{array} \end{array}$$
$$\begin{array}{ll} c) \quad \begin{array}{l} \frac{a+b}{2} - \frac{2b}{3} = 2\frac{1}{2} \\ 1\frac{1}{2}a + 2b = 0 \end{array} & d) \quad \begin{array}{l} \frac{x-3}{2} - \frac{y-4}{4} = 1 \\ \frac{2x-5}{3} - \frac{2y-7}{9} = 2 \end{array} \end{array}$$

$$e) \quad \begin{aligned} \frac{c+d}{3} + \frac{d}{5} &= -2 \\ \frac{2c-d}{3} - \frac{3c}{4} &= 1\frac{1}{2} \end{aligned}$$

$$f) \quad \begin{aligned} \frac{x+7}{2} - 3y &= 8 \\ y + 3\frac{1}{2} &= \frac{x}{3} \end{aligned}$$

$$g) \quad \begin{aligned} \frac{v+3}{2} - \frac{z-2}{3} &= 2 \\ \frac{v-1}{4} + \frac{z+1}{3} &= 4 \end{aligned}$$

$$h) \quad \begin{aligned} \frac{x}{2} - \frac{y}{3} &= 1 \\ \frac{5}{6}(3x-1) &= \frac{3}{4}(2y-5) \end{aligned}$$

9) Řešte v \mathbb{R} soustavy rovnic a proveďte zkoušky:

$$a) \quad \begin{aligned} \frac{6-2x}{2} - \frac{y+5}{5} &= 3 \\ \underline{(x-2)^2 - (x+3)^2 = 2y+5} \end{aligned}$$

$$b) \quad \begin{aligned} (p-r)(p+r) &= (p-1)^2 - (r-1)^2 \\ \underline{p^2 + r^2} &= \underline{(p-1)^2 + (r-1)^2} \end{aligned}$$

$$c) \quad \begin{aligned} \frac{2p}{7} + \frac{q}{2} &= \frac{1}{14} \\ \underline{(p+3)^2 - (p+1)^2 = 4(3-q)} \end{aligned}$$

$$d) \quad \begin{aligned} m^2 + n^2 &= (m+1)^2 + (n+1)^2 \\ \underline{m^2 + n^2} &= \underline{(m-1)^2 + (n-1)^2} \end{aligned}$$

Soustavy rovnic - výsledky

1) a) $[1; 2]$, b) $[-3; 1]$, c) $[5; -1]$, d) $[-1; -1]$

2) a) $[5; -2]$; b) $[-4; 4]$; c) $[0; -1]$; d) nekonečně mnoho řešení-řešením je každá uspořádaná dvojice reálných čísel $[x; 4x + 3]$

3)

a) $[2; 2]$, b) $[7; -1]$, c) $[3; -4]$, d) $[-2; -3]$, e) $\left[\frac{1}{3}; 4\right]$, f) $\left[\frac{4}{5}; -\frac{1}{2}\right]$, g) $[3; -1]$, h) $\left[\frac{3}{8}; \frac{5}{6}\right]$

4) a) $\left[-\frac{1}{3}; \frac{2}{3}\right]$, b) $\left[\frac{1}{2}; -2\right]$, c) $\left[\frac{1}{5}; -\frac{1}{3}\right]$, d) $\left[\frac{2}{5}; \frac{3}{5}\right]$

5) a) $[5; 6]$, b) $[-1; -2]$, c) soustava rovnic nemá řešení, d) $[4; -1]$, e) $\left[\frac{1}{2}; -3\right]$,
f) $\left[\frac{2}{3}; -\frac{3}{4}\right]$, g) $\left[0; -\frac{1}{2}\right]$, h) $[2; -3]$

6) a) $[2; 3]$, b) $[-2; 4]$, c) nemá řešení, d) nekonečně mnoho řešení-řešením je každá uspořádaná dvojice reálných čísel $\left[x; -\frac{4}{5}x + 3\right]$

7) a) $\left[3; \frac{1}{2}\right]$, b) $\left[-1; \frac{3}{4}\right]$, c) $[-5; 3]$, d) $[4; -6]$

8) a) $[40; 60]$, b) $\left[\frac{3}{4}; 3\right]$, c) $[4; -3]$, d) $[7; 8]$, e) $[2; -5]$, f) $\left[12; \frac{1}{2}\right]$, g) $[5; 8]$

9) a) nekonečně mnoho řešení-řešením je každá uspořádaná dvojice reálných čísel $[x; -5 - 5x]$, b) $\left[\frac{1}{2}; \frac{1}{2}\right]$, c) $[2; -1]$, d) nemá řešení

