

8.B Matematika 10. – 16.5.

1) **Rovnice** – učebnice str. 94/4 písemně do sešitu vypracovat

NAPSAT DO SEŠITU

A) Rovnice s nekonečně mnoho řešeními:

Př. : $2 \cdot (y + 3) + 2y = 4 \cdot (y + 1) + 2$ ověření : mohu dosadit jakékoli reálné číslo např. 0

$$2y + 6 + 2y = 4y + 4 + 2$$

$$L = 2 \cdot (0 + 3) + 2 \cdot 0 = 2 \cdot 3 + 0 = 6$$

$$4y + 6 = 4y + 6 \quad / -4y$$

$$P = 4 \cdot (0 + 1) + 2 = 4 \cdot 1 + 2 = 4 + 2 = 6$$

$$6 = 6 \quad / -6$$

$$L = P$$

$$0 = 0$$

B) Rovnice s žádným řešením

Př. : $3 \cdot (2y - 4) - 3y = 2 \cdot (y - 3) + y + 8$

ZKOUŠKA SE NEDĚLÁ

$$6y - 12 - 3y = 2y - 6 + y + 8$$

$$3y - 12 = 3y + 2 \quad / -3y$$

$$-12 = 2$$

Neplatí rovnost → rovnice nemá řešení

2) Doporučuji pustit si na Youtube: **Časté chyby při řešení rovnic (17:28)** – vypočítejte si vždy příklad sami a pak si to zkontrolujte podle videa

3) Pracovní sešit **49/12 a – h** vypracovat písemně (nezapomeňte na ověření, pokud vyjde rovnice s nekonečně mnoho řešeními)

4) Učebnice str. **150/1 a – g** povinně, **h – n** dobrovolně

Vypracování na dalších stranách

Videokonference přes Zoom 11.5. 17:00. Nemám od vás všech mailové adresy. Ozvěte se mi!!

Moje adresa : Bagarova@seznam.cz

94/4.

$$a) \frac{x+3}{4} = 2 + \frac{x-4}{5} \quad | \cdot 20$$

$$5 \cdot (x+3) = 40 + 4 \cdot (x-4)$$

$$5x + 15 = 40 + 4x - 16$$

$$5x + 15 = 24 + 4x \quad | -4x; -15$$

$$\underline{x = 9}$$

$$zk: L = \frac{9+3}{4} = 3 \quad P = 2 + \frac{9-4}{5} = 2+1 = \underline{3}$$

$$b) x - 2 \frac{1}{2} = \frac{3x-8}{6} - \frac{6-3x}{5} \quad | \cdot 30$$

$$30x - 75 = 5 \cdot (3x-8) - 6 \cdot (6-3x)$$

$$30x - 75 = 15x - 40 - 36 + 18x$$

$$30x - 75 = 33x - 76 \quad | -30x; +76$$

$$1 = 3x \Rightarrow x = \frac{1}{3}$$

$$zk: L = \frac{1}{3} - \frac{5}{2} = \frac{2-15}{6} = -\frac{13}{6}$$

$$P = \frac{3 \cdot \frac{1}{3} - 8}{6} - \frac{6 - 3 \cdot \frac{1}{3}}{5} = -\frac{7}{6} - 1 = -\frac{13}{6}$$

$$c) 1 - \frac{3-w}{4} = \frac{2w-5}{6} \quad | \cdot 12$$

$$12 - 3 \cdot (3-w) = 2 \cdot (2w-5)$$

$$12 - 9 + 3w = 4w - 10$$

$$3 + 3w = 4w - 10 \quad | -3w; +10$$

$$\underline{13 = w}$$

$$zk: L = 1 - \frac{3-13}{4} = 1 - \frac{-10}{4} = \frac{4}{4} + \frac{10}{4} = \frac{14}{4} = \frac{7}{2}$$

$$P = \frac{2 \cdot 13 - 5}{6} = \frac{21}{6} = \frac{7}{2} \quad L = P$$

$$d) \frac{r+3}{4} + \frac{r-5}{3} - 2 = 0 \quad | \cdot 12$$

$$3 \cdot (r+3) + 4 \cdot (r-5) - 24 = 0$$

$$3r + 9 + 4r - 20 - 24 = 0$$

$$7r - 35 = 0 \quad | +35$$

$$7r = 35 \quad | :7$$

$$\underline{r = 5}$$

$$zk: L = \frac{5+3}{4} + \frac{5-5}{3} - 2 = 2 + 0 - 2 = \underline{0}$$

$$P = \underline{0} \quad L = P$$

$$e) \frac{3}{2} - \frac{3-7y}{20} + \frac{y+1}{4} = 2 - \frac{7-3y}{10} \quad | \cdot 20$$

$$3 \cdot 10 - 1 \cdot (3-7y) + 5 \cdot (y+1) = 40 - 2 \cdot (7-3y)$$

$$30 - 3 + 7y + 5y + 5 = 40 - 14 + 6y$$

$$32 + 12y = 26 + 6y \quad | -6y; -32$$

$$6y = -6 \quad | :6$$

$$\underline{y = -1}$$

$$zk: L = \frac{3}{2} - \frac{3-7 \cdot (-1)}{20} + \frac{-1+1}{4} =$$

$$= \frac{3}{2} - \frac{10}{20} = \frac{3}{2} - \frac{1}{2} = \frac{2}{2} = \underline{1}$$

$$P = 2 - \frac{7-3 \cdot (-1)}{10} = 2 - \frac{10}{10} = 2 - 1 = \underline{1}$$

$$L = P$$

$$f) z+6 = \frac{10+z}{2} - \frac{z+3}{4} \quad | \cdot 4$$

$$4z + 24 = 2 \cdot (10+z) - 1 \cdot (z+3)$$

$$4z + 24 = 20 + 2z - z - 3$$

$$4z + 24 = 17 + z \quad | -z; -24$$

$$3z = -7 \quad | :3$$

$$\underline{z = -\frac{7}{3}}$$

$$zk: L = -\frac{7}{3} + 6 = -\frac{7}{3} + \frac{18}{3} = \underline{\frac{11}{3}}$$

$$P = \frac{10 + (-\frac{7}{3})}{2} - \frac{-\frac{7}{3} + 3}{4} =$$

$$= \frac{\frac{30-7}{3}}{2} - \frac{\frac{-7+9}{3}}{4} = \frac{23}{6} - \frac{2}{12} =$$

$$= \frac{46-2}{12} = \frac{44}{12} = \underline{\frac{11}{3}}$$

$$L = P$$

12. Vyřeš rovnici a proved' zkoušku:

a) $2(9 + 4x) + 5(2x + 3) = 9(5 + 2x)$

$$18 + 8x + 10x + 15 = 45 + 18x$$

$$18x + 43 = 18x + 45$$

$$43 \neq 45$$

$\emptyset$

b) $2(x + 3) - 3(2 - x) = 5x$

$$2x + 6 - 6 + 3x = 5x$$

$$0 = 0$$

∞

ověření: $x = 0$

$$L = 2 \cdot (0 + 3) - 3 \cdot (2 - 0) =$$

$$= 6 - 6 = 0$$

$$P = 5 \cdot 0 = 0$$

c) $\frac{2x+1}{5} + \frac{x-2}{3} = \frac{11x-7}{15} \quad | \cdot 15$

$$3 \cdot (2x+1) + 5 \cdot (x-2) = 11x-7$$

$$6x+3+5x-10=11x-7$$

$$11x-7=11x-7$$

$$0=0$$

∞

ověření: $x = 2$

$$L = \frac{4+1}{5} + \frac{2-2}{3} = 1 \quad P = \frac{11 \cdot 2 - 7}{15} = \frac{15}{15} = 1$$

d) $\frac{x+2}{2} - \frac{x-1}{3} = \frac{x+4}{6} \quad | \cdot 6$

$$3 \cdot (x+2) - 2 \cdot (x-1) = x+4$$

$$3x+6-2x+2=x+4$$

$$x+8=x+4$$

$$8 \neq 4$$

$\emptyset$

49

e) $\frac{3(x+1)}{4} + \frac{2(x-1)}{3} - \frac{5(x+2)}{6} = \frac{7x}{12} \quad | \cdot 12$

$$9(x+1) + 8(x-1) - 10(x+2) = 7x$$

$$9x+9+8x-8-10x-20=7x$$

$$7x-21=7x$$

$$-21 \neq 0$$

$\emptyset$

g) $4(x+4) - 5(4-x) = 3(3x+7)$

$$4x+16-20+5x=9x+21$$

$$9x-4=9x+21$$

$$-4 \neq 21$$

$\emptyset$

f) $\frac{x+5}{4} - \frac{x-3}{3} = \frac{7x+3}{12} \quad | \cdot 12$

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

$$3x+15-4x+12=7x+3$$

$$-x+27=7x+3$$

$$24=8x$$

$$x=3$$

$$L = \frac{8}{4} - \frac{0}{3} =$$

$$= 2$$

$$P = \frac{7 \cdot 3 + 3}{12} = 2$$

h) $\frac{2x+3}{9} - \frac{x+1}{2} = -\frac{5x+3}{18} \quad | \cdot 18$

$$2(2x+3) - 9(x+1) = -5x-3$$

$$4x+6-9x-9=-5x-3$$

$$-5x-3=-5x-3$$

$$0=0$$

∞

ověření: $x = 3$

$$L = \frac{6+3}{9} - \frac{3+1}{2} = 1-2 = -1 \quad P = -\frac{5 \cdot 3 + 3}{18} = -1$$

150/1.

$$\begin{aligned} a) \quad 4x \cdot (x-5) &= x \cdot (4x+6) - 52 \\ 4x^2 - 20x &= 4x^2 + 6x - 52 \quad | -4x^2 \\ -20x &= 6x - 52 \quad | -6x \\ -26x &= -52 \quad | : (-26) \\ x &= 2 \end{aligned}$$

$$\begin{aligned} ZK: L &= 4 \cdot 2 \cdot (2-5) = 8 \cdot (-3) = -24 \\ P &= 2 \cdot (8+6) - 52 = 28 - 52 = -24 \\ L &= P \end{aligned}$$

$$\begin{aligned} c) \quad 40 &= 19,4 \cdot (2-5w) - 5 \cdot (9w-11,6) \\ 40 &= 38,8 - 97w - 45w + 58 \\ 40 &= 96,8 - 142w \quad | -96,8 \\ -56,8 &= -142w \\ w &= 0,4 \end{aligned}$$

$$\begin{aligned} ZK: L &= 40 \\ P &= 19,4 \cdot (2-5 \cdot 0,4) - 5 \cdot (9 \cdot 0,4 - 11,6) = \\ &= 19,4 \cdot (2-2) - 5 \cdot (3,6 - 11,6) = \\ &= 0 - 5 \cdot (-8) = +40 \quad L=P \end{aligned}$$

$$\begin{aligned} d) \quad 3 \cdot (5-2x) - 1 &= 4 - \frac{7}{2}x \quad | \cdot 2 \\ 6 \cdot (5-2x) - 2 &= 8 - 7x \\ 30 - 12x - 2 &= 8 - 7x \\ 28 - 12x &= 8 - 7x \quad | +12x; -8 \\ 20 &= 5x \quad | : 5 \\ x &= 4 \end{aligned}$$

$$\begin{aligned} ZK: L &= 3 \cdot (5-2 \cdot 4) - 1 = 3 \cdot (-3) - 1 = -10 \\ P &= 4 - \frac{7}{2} \cdot 4 = 4 - 14 = -10 \quad L=P \end{aligned}$$

$$\begin{aligned} g) \quad \frac{3}{4} \cdot (x-1) - \frac{2}{3} \cdot (2x-1) &= 2 - \frac{5}{6} \cdot (x+1) \quad | \cdot 12 \\ 9 \cdot (x-1) - 8 \cdot (2x-1) &= 24 - 10 \cdot (x+1) \\ 9x - 9 - 16x + 8 &= 24 - 10x - 10 \\ -7x - 1 &= 14 - 10x \quad | +10x; +1 \\ 3x &= 15 \quad | : 3 \\ x &= 5 \end{aligned}$$

$$\begin{aligned} h) \quad 3 \cdot (2,8y - 4,5) &= 6,4 - 5 \cdot (3,5 - 1,6y) \\ 8,4y - 13,5 &= 6,4 - 17,5 + 8y \\ 8,4y - 13,5 &= -11,1 + 8y \quad | -8y \\ 0,4y &= 2,4 \quad | : 0,4 \\ y &= 6 \end{aligned}$$

$$\begin{aligned} ZK: L &= 3 \cdot (2,8 \cdot 6 - 4,5) = 3 \cdot (16,8 - 4,5) = \\ &= 3 \cdot 12,3 = 36,9 \\ P &= 6,4 - 5 \cdot (3,5 - 1,6 \cdot 6) = \\ &= 6,4 - 5 \cdot (3,5 - 9,6) = \\ &= 6,4 - 5 \cdot (-6,1) = 6,4 + 30,5 = 36,9 \end{aligned}$$

$$\begin{aligned} d) \quad \frac{1}{3} \cdot (5-k) + 11 &= 4 \cdot (2z-1) \cdot 3 \\ 1 \cdot (5-k) + 33 &= 12 \cdot (2z-1) \\ 5-k+33 &= 24z-12 \\ -k+38 &= 24z-12 \quad | +k; +12 \\ 50 &= 25z \quad | : 25 \\ z &= 2 \end{aligned}$$

$$\begin{aligned} ZK: L &= \frac{1}{3} \cdot (5-2) + 11 = \frac{1}{3} \cdot 3 + 11 = 12 \\ P &= 4 \cdot (2 \cdot 2 - 1) = 4 \cdot 3 = 12 \quad L=P \end{aligned}$$

$$\begin{aligned} f) \quad 1 - \frac{5v-2}{3} &= \frac{v+12}{2} \quad | \cdot 6 \\ 6 - 2 \cdot (5v-2) &= 3 \cdot (v+12) \\ 6 - 10v + 4 &= 3v + 36 \\ 10 - 10v &= 3v + 36 \quad | +10v; -36 \\ -26 &= 13v \quad | : 13 \\ v &= -2 \end{aligned}$$

$$\begin{aligned} ZK: L &= 1 - \frac{5 \cdot (-2) - 2}{3} = 1 - \frac{-12}{3} = \\ &= 1 + 4 = 5 \\ P &= \frac{-2+12}{2} = \frac{10}{2} = 5 \quad L=P \end{aligned}$$

$$\begin{aligned} ZK: L &= \frac{3}{4} \cdot (5-1) - \frac{2}{3} \cdot (2 \cdot 5-1) = \\ &= 3 - 6 = -3 \\ P &= 2 - \frac{5}{6} \cdot (5+1) = 2 - \frac{5}{6} \cdot 6 = \\ &= 2 - 5 = -3 \quad L=P \end{aligned}$$

$$k) \frac{3k+1}{4} = \frac{5k-1}{6} + \frac{2k+1}{12} \quad | \cdot 12$$

$$* 3 \cdot (3k+1) = 2 \cdot (5k-1) + 1 \cdot (2k+1)$$

$$9k+3 = 10k-2+2k+1$$

$$9k+3 = 12k-1 \quad | -9z; +1$$

$$4 = 3k \quad | :3$$

$$k = \frac{4}{3}$$

$$zk: L = \frac{3 \cdot \frac{4}{3} + 1}{4} = \frac{4+1}{4} = \frac{5}{4}$$

$$P = \frac{5 \cdot \frac{4}{3} - 1}{6} + \frac{2 \cdot \frac{4}{3} + 1}{12} = \frac{\frac{20}{3} - \frac{3}{3}}{6} +$$

$$+ \frac{\frac{8}{3} + \frac{3}{3}}{12} = \frac{\frac{17}{3}}{18} + \frac{\frac{11}{3}}{36} = \frac{6}{9}$$

$$= \frac{34+11}{36} = \frac{45}{36} = \frac{5}{4}$$

$$i) \frac{u+1}{2} - \frac{u+4}{3} = \frac{u-7}{6} \quad | \cdot 6$$

$$3 \cdot (u+1) - 2 \cdot (u+4) = 1 \cdot (u-7)$$

$$3u+3-2u-8 = u-7$$

$$u-5 = u-7 \quad | -u$$

$$-5 = -7$$

rovnice nemá řešení

$$j) \frac{v+4}{2} = \frac{v-6}{3} \quad | \cdot 6$$

$$3 \cdot (v+4) = 2 \cdot (v-6)$$

$$3v+12 = 2v-12 \quad | -2v; -12$$

$$v = -24$$

$$zk: L = \frac{-24+4}{2} = -10 \quad P = \frac{-24-6}{3} = -10 \quad L=P$$

$$k) \frac{3k-2}{3} - 4k = \frac{2k-1}{2} + 2 \quad | \cdot 6$$

$$* 2 \cdot (3k-2) - 24k = 3 \cdot (2k-1) + 12$$

$$6k-4-24k = 6k-3+12$$

$$-18k-4 = 6k+9 \quad | -6z; +4$$

$$-24k = 13 \quad | :(-24)$$

$$k = -\frac{13}{24}$$

$$zk: L = \frac{3 \cdot (-\frac{13}{24}) - 2}{3} - 4 \cdot (-\frac{13}{24}) = \frac{\frac{-39}{24} - \frac{48}{24}}{3} + \frac{52}{24} = \frac{23}{24}$$

$$P = \frac{2 \cdot (-\frac{13}{24}) - 1}{6} + 2 = \frac{\frac{-26}{24} - \frac{24}{24}}{6} + 2 = \frac{-\frac{50}{24}}{6} + 2 = \frac{23}{24} \quad L=P$$

$$l) \frac{5+2v}{3} = \frac{2v-12}{3} \quad | \cdot 3$$

$$\frac{5+2v}{3} = \frac{2v-12}{3} \quad | \cdot 18$$

$$6 \cdot (5+2v) = 1 \cdot (2v-12)$$

$$30+12v = 2v-12 \quad | -2v; -30$$

$$10v = -42 \quad | :10$$

$$v = -4,2$$

$$zk: L = \frac{5+2 \cdot (-4,2)}{3} = \frac{-3,4}{3} = -\frac{34}{30} = -\frac{17}{15}$$

$$P = \frac{2 \cdot (-4,2) - 12}{6} = \frac{-20,4}{6} = -\frac{204}{180} = -\frac{34}{30} = -\frac{17}{15}$$

$$m) (x+2) \cdot (x-1) - 18 = (x+3) \cdot (x-4)$$

$$x^2 - x + 2x - 2 - 18 = x^2 - 4x + 3x - 12$$

$$x^2 + x - 20 = x^2 - x - 12 \quad | -x^2$$

$$x - 20 = -x - 12 \quad | +x; +20$$

$$2x = 8 \quad | :2$$

$$x = 4$$

$$zk: L = (4+2) \cdot (4-1) - 18 =$$

$$= 6 \cdot 3 - 18 = 0$$

$$P = (4+3) \cdot (4-4) = 0$$

$$L=P$$

$$n) (x+2)^2 + 3 = 3x - 2 \cdot (x-5) + (x-2)^2$$

$$x^2 + 4x + 4 + 3 = 3x - 2x + 10 + x^2 - 4x + 4 \quad | -x^2$$

$$4x + 7 = -3x + 14 \quad | +3x; -7$$

$$7x = 7 \quad | :7$$

$$x = 1$$

$$zk: L = (1+2)^2 + 3 = 9 + 3 = 12$$

$$P = 3 \cdot 1 - 2 \cdot (1-5) + (3-2)^2 =$$

$$= 3 + 8 + 1 = 12 \quad L=P$$