

## Lineární rovnice se zlomky

Pr. Vyřeš rovnici a proved' skoušku:

a)  $x = 5 + \frac{x}{2} \quad | \cdot 2 \quad \dots$  všechny členy rovnice  
vynásobíme jmenovatelem

$$2 \cdot x = 2 \cdot 5 + \cancel{2} \cdot \frac{x}{\cancel{2}}$$

$$2x = 10 + x \quad | -x$$

$$2x - x = 10$$

$$\underline{\underline{x = 10}}$$

$$zk: L(10) = 10$$

$$L = P$$

$$P(10) = 5 + \frac{10}{2} = 5 + 5 = 10$$

b)  $\frac{3x}{4} - 2 = x$

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

všechny členy vynásobíme  
společným jmenovatelem

$$6 \cdot x - \overset{2}{\cancel{6}} \cdot \frac{1}{\underset{1}{\cancel{3}}} = \overset{1}{\cancel{6}} \cdot \frac{x}{\underset{1}{\cancel{6}}} + \overset{3}{\cancel{6}} \cdot \frac{1}{\underset{1}{\cancel{2}}}$$

$$6x - 2 = 1x + 3 \quad | +2 - 1x$$

$$6x - 1x = 3 + 2$$

$$5x = 5 \quad | :5$$

$$\underline{\underline{x = 1}}$$

$$zk: L(1) = 1 - \frac{1}{3} = \frac{3-1}{3} = \frac{2}{3}$$

$$P(1) = \frac{1}{6} + \frac{1}{2} = \frac{1+3}{6} = \frac{4}{6} = \frac{2}{3}$$

$$L = P$$

$$d) \quad \frac{3x}{5} - \frac{1}{15} = \frac{2x}{3}$$

$$e) \frac{4}{5}x - 2 = \frac{3}{4}x - 1 \quad | \cdot 20$$

$$\cancel{20}^4 \cdot \frac{4}{\cancel{5}_1} x - 20 \cdot 2 = \cancel{20}^5 \cdot \frac{3}{\cancel{4}_1} x - 20 \cdot 1$$

$$16x - 40 = 15x - 20 \quad | +40 - 15x$$

$$16x - 15x = -20 + 40$$

$$\underline{\underline{x = 20}}$$

$$ZK: L(20) = \frac{4}{5} \cdot \cancel{20}^4 - 2 = 16 - 2 = 14$$

$$P(20) = \frac{3}{4} \cdot \cancel{20}^5 - 1 = 15 - 1 = 14$$

$$L = P$$

$$f) \frac{1}{6}x - 2 = 3 - \frac{1}{4}x$$

$$g) \frac{(x+1)}{4} + \frac{(x+3)}{2} = 1 \quad | \cdot 4$$

... výrazy v čitateli  
dáme do závorek

$$\cancel{4}^1 \cdot \frac{(x+1)}{\cancel{4}_1} + \cancel{4}^2 \cdot \frac{(x+3)}{\cancel{4}_1} = 4 \cdot 1$$

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

$$x+1 + 2x+6 = 4$$

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

$$3x = 4-7$$

$$3x = -3 \quad | :3$$

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

$$\text{zk: } L(-1) = \frac{-1+1}{4} + \frac{-1+3}{2} = \frac{0}{4} + \frac{2}{2} = 1$$

$$P(-1) = 1$$

$$L = P$$

$$h) \frac{x-10}{7} + 2 = \frac{x+2}{5}$$

$$i) \quad \frac{3}{5} \cdot (x-1) + 1 = \frac{1}{2} \cdot (x+1) \quad \dots \text{roznesobit rovnocky}$$

$$\frac{(3x-3)}{5} + 1 = \frac{(x+1)}{2} \quad | \cdot 10$$

$$\cancel{10}^2 \cdot \frac{(3x-3)}{\cancel{5}_1} + 10 \cdot 1 = \cancel{10}^5 \cdot \frac{(x+1)}{\cancel{2}_1}$$

$$2 \cdot (3x-3) + 10 = 5 \cdot (x+1)$$

$$6x - 6 + 10 = 5x + 5$$

$$6x + 4 = 5x + 5 \quad | -4 - 5x$$

$$6x - 5x = 5 - 4$$

$$\underline{\underline{x = 1}}$$

$$L(1) = \frac{3}{5} \cdot (1-1) + 1 = \frac{3}{5} \cdot 0 + 1 = 1$$

$$P(1) = \frac{1}{2} \cdot (1+1) = \frac{1}{2} \cdot 2 = \frac{2}{2} = 1$$

$L = P$

$$j) \quad \frac{1}{2} \cdot (x+1) = 1 + \frac{2}{3} \cdot (x-1)$$