1. Reši enačbo in zapiši množico rešitev, če je $\mathbb{U} = \mathbb{N}$.

a) $\frac{x}{2} + \frac{3x}{4} + \frac{5x}{6} = 25$ $/\cdot 12$ $\quad v(2,4,6)=12$

$\frac{x\cdot 6}{2\cdot 1} + \frac{3x\cdot 3}{4\cdot 1} + \frac{5x\cdot 2}{6\cdot 1} = 25\cdot 12$

$6x + 9x + 10x = 300$

$25x = 300 \;/:25$

$x = 300:25$

$x = 12$

$R = \{12\}$

b) $\frac{x}{2} + \frac{1}{3} - 3 = \frac{x}{6} + 3x$ $/\cdot 6$ $\quad v(2,3,6)=6$

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

$3x + 2 - 18 = x + 18x$

$3x - x - 18x = -2 + 18$

$-16x = 16 \;/:(-16)$

$x = -1$

$R = \{\}$ (ker je $\mathbb{U} = \mathbb{N}$)

c) $\frac{x}{9} + \frac{x}{4} + 1 = \frac{5x}{12}$ $/\cdot 36$ $\quad v(9,4,12)=36$

$\frac{x\cdot 36}{9} + \frac{x\cdot 36}{4} + 1\cdot 36 = \frac{5x\cdot 36}{12}$

$4x + 9x + 36 = 15x$

$4x + 9x - 15x = -36$

$-2x = -36 \;/:(-2)$

$x = +18$ $\quad R = \{18\}$

č) $\frac{z}{4} + \frac{z}{3} = \frac{z}{2} - 2$ $\quad v(4,3,2)=12$

$\frac{z\cdot 12}{4} + \frac{z\cdot 12}{3} = \frac{z}{2}\cdot 12 - 2\cdot 12$

$3z + 4z = 6z - 24$

$3z + 4z - 6z = -24$

$1z = -24$

$R = \{\}$, ker je $\mathbb{U} = \mathbb{N}$

2. Reši enačbo in naredi preizkus.

a) $\frac{3x-6}{4} = \frac{2}{3}x$ $/\cdot 12$ $\quad v(3,4)=12$

$\frac{(3x-6)\cdot 12}{4} = \frac{2\cdot 12}{3}x$

$3(3x-6) = 8x$

$9x - 18 = 8x$

$9x - 8x = 18$

$x = 18$ $\quad R = \{18\}$

Preizkus:

L: $\frac{3x-6}{4} = \frac{3\cdot 18-6}{4} = \frac{54-6}{4} = \frac{48}{4} = 12$

D: $\frac{2}{3}x = \frac{2}{3}\cdot 18 = \frac{2}{3}\cdot\frac{18^{6}}{1} = 12$

$L = D$

b) $2 + \frac{x+1}{5} = \frac{2x+8}{3}$ $/\cdot 15$ $\quad v(3,5)=15$

$2\cdot 15 + \frac{(x+1)\cdot 15}{5} = \frac{(2x+8)\cdot 15}{3}$

$30 + 3(x+1) = 5(2x+8)$

$30 + 3x + 3 = 10x + 40$

$3x - 10x = 40 - 30 - 3$

$-7x = 7 \;/:(-7)$

$x = -1$ $\quad R = \{-1\}$

Preizkus:

L: $2 + \frac{x+1}{5} = 2 + \frac{-1+1}{5} = 2 + \frac{0}{5} = 2 + 0 = 2$

D: $\frac{2x+8}{3} = \frac{2\cdot(-1)+8}{3} = \frac{-2+8}{3} = \frac{6}{3} = 2$

c) $\frac{(3x-9)\cdot 12}{2} - \frac{(2x-4)\cdot 12}{3} = \frac{(5x+3)\cdot 12}{4} - \frac{(4x-2)\cdot 12}{3}$ $/\cdot 12$ $\quad v(2,3,4)=12$

$6(3x-9) - 4(2x-4) = 3(5x+3) - 4(4x-2)$

$18x - 54 - 8x + 16 = 15x + 9 - 16x + 8$

$18x - 8x - 15x + 16x = 9 + 8 + 54 - 16$

$11x = 55 \;/:11$

$x = 5$ $\quad R = \{5\}$

3. Reši enačbe.

a) $\frac{(x+3)\cdot 15}{3} - \frac{(2x-1)\cdot 15}{5} = \frac{2(3x+2)\cdot 15}{15} \quad / \cdot 15$

$15(3,5,15) = 15$

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

$5x + 15 - 6x + 3 = 6x + 4$

$5x - 6x - 6x = 4 - 15 - 3$

$-7x = -14 \quad / : (-7)$

$x = +2$

$R = \{2\}$

b) $3x + 1 - \frac{(3x-1)\cdot 5}{5} = 2(x+1) + \frac{8(x-2)\cdot 5}{5} \quad / \cdot 5$

$15x + 5 - (3x - 1) = 10(x+1) + 8(x-2)$

$15x + 5 - 3x + 1 = 10x + 10 + 8x - 16$

$15x - 3x - 10x - 8x = -16 + 10 - 1 - 5$

$-6x = -12 \quad / : (-6)$

$x = +2$

$R = \{2\}$

c) $\frac{(x-5)\cdot 24}{2} + \frac{(x-1)\cdot 24}{8} = \frac{(x-3)\cdot 24}{4} + \frac{(x-4)\cdot 24}{3} \quad / \cdot 24$

$15(2,3,4,8) = 24$

$12(x-5) + 3(x-1) = 6(x-3) + 8(x-4)$

$12x - 60 + 3x - 3 = 6x - 18 + 8x - 32$

$12x + 3x - 6x - 8x = -18 - 32 + 60 + 3$

$x = 13$

$R = \{13\}$

d) $\frac{(x+2)^2 \cdot 2}{2} + \frac{(x+1)(x-1)\cdot 2}{2} = (x-1)^2 \cdot 2 \quad / \cdot 2$

$(x+2)^2 + (x+1)(x-1) = 2(x-1)^2$

$x^2 + 2 \cdot x \cdot 2 + 2^2 + x^2 - 1^2 = 2(x^2 + 2 \cdot x \cdot (-1) + (-1)^2)$

$x^2 + 4x + 4 + x^2 - 1 = 2(x^2 - 2x + 1)$

$x^2 + 4x + 4 + x^2 - 1 = 2x^2 - 4x + 2$

$x^2 + 4x + 4 + x^2 - 1 - 2x^2 + 4x = 2 - 4 + 1$

$8x = -1 \quad / : 8$

$x = -\frac{1}{8}$

$R = \{-\frac{1}{8}\}$