1. a.) $2x + 8 = 2 \cdot 19 + x + 3$

$2x + 8 = x + 41 \quad | -x$

$x + 8 = 41 \quad | -8$

$x = 33$ 1

(2) b.) $4x + 19 + 4 = x + 5 \cdot 19$

$4x + 23 = x + 95 \quad | -x$

$3x + 23 = 95 \quad | -23$

$3x = 72 \quad | :3$

$x = 24$ 1

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2. Haus 1: $x + 4$

Haus 2: $2x$

Haus 3: $x$

$x + 4 + 2x + x = 28$

(2) $4x + 4 = 28 \quad | -4$

$4x = 24 \quad | :4$

$x = 6$

Haus 1: 10 Personen

Haus 2: 12 Personen

Haus 3: 6 Personen

2

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3. Alina: $x + 12$

Nicolas: $4x$

Leonie: $x$

$x + 12 + 4x + x = 144$

(2)

$6x + 12 = 144 \quad | -12$

$6x = 132 \quad | : 6$

$x = 22$

Alina: 34 Fr.

Nicolas: 88 Fr.

Leonie: 22 Fr. 2

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4. a.) $2x - (3 - 4x) = 5 + (6x - 7)$

$2x - 3 + 4x = 5 + 6x - 7$

$6x - 3 = 6x - 7 \quad | + 6x$

$-3 = -7$

$\mathbb{L} = \{\}$ 1

b.) $5 + (5 - 5x) = -5 - (5 - 5x)$

$5 + 5 - 5x = -5 - 5 + 5x$

$10 - 5x = -10 + 5x \quad | + 5x$

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

$20 = 10x \quad | : 10$

$2 = x$

$\mathbb{L} = \{2\}$ 1

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c.) $(x-4)(x-1) = x(x+2) - 3$

$x^2 - 5x + 4 = x^2 + 2x - 3 \quad |+5x$

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

$7 = 7x \quad |:7$

$1 = x$

$\mathbb{L} = \{1\}$ 1

d.) $(x+1)(x+1) = x^2 + 1$

$x^2 + 2x + 1 = x^2 + 1 \quad |-1$

$2x = 0 \quad |:2$

$x = 0$

$\mathbb{L} = \{0\}$ 1

e.) $3(2x-3) - 2(3x+2) = 3x - 2$

$6x - 9 - 6x - 4 = 2x - 2$

$-13 = 3x - 2 \quad |+2$

$-11 = 3x \quad |:3$

$-\frac{11}{3} = x$

$\mathbb{L} = \{-\frac{11}{3}\}$ 1

f.) $2x(3x-4) = 3x(2x+1) + 33$

$6x^2 - 8x = 6x^2 + 3x + 33 \quad |+8x$

$0 = 11x + 33 \quad |-33$

$-33 = 11x \quad |:11$

$-3 = x$

$\mathbb{L} = \{-3\}$ 1

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g.) $\frac{2x}{3} + 1 = x + \frac{5}{6} \quad | \cdot 12$

$8x + 12 = 12x + 10 \quad | -8x$

$12 = 4x + 10 \quad | -10$

$2 = 4x \quad | : 4$

$0{,}5 = x$

$\mathbb{L} = \{0{,}5\}$ 1

h.) $2x - \left(3 - \frac{x}{4}\right) = -5$

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

$8x - 12 + x = -20$

$9x - 12 = -20 \quad | +12$

$9x = -8 \quad | : 9$

$x = -\frac{8}{9}$

$\mathbb{L} = \{-\frac{8}{9}\}$ 1

i.) $\frac{1}{4} - \left(x + \frac{1}{6}\right) = 2x$

$\frac{1}{4} - x - \frac{1}{6} = 2x \quad | \cdot 12$

$3 - 12x - 2 = 24x$

$1 - 12x = 24x \quad | +12x$

$1 = 36x \quad | : 36$

$\frac{1}{36} = x$

$\mathbb{L} = \{\frac{1}{36}\}$ 1

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j.) $2x - [3x - (4 - 5x)] + 6 = 7$

$2x - [3x - 4 + 5x] + 6 = 7$

$2x - 3x + 4 - 5x + 6 = 7$

$-6x + 10 = 7 \quad | +6x$

$10 = 6x + 7 \quad | -7$

$3 = 6x \quad | :6$

$0{,}5 = x$

$L = \{0{,}5\}$ 1

10

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