

Aufgaben zu linearen Gleichungen

Bestimmen Sie die Lösungsmenge der folgenden Gleichungen.

1 $58x + 55 - 63x = 77 - 20x - 22$

2 $12x + 8 - 15x = -17x + 6 + 14x - 4$

3 $0 = 42 - 24x + 5x - 9x + x + 12$

4 $16x - 23 + 7x - 11 + 11x - 15 - 25x + 22 = 0$

5 $-4,6x - 1,376 = -2,907 - 5,6x$

6 $\frac{6}{11}x - 2\frac{2}{3}x - 15 = -2\frac{1}{3}x + \frac{1}{22}x$

7 $(12x + 8) - (10 + 7x) = 5x + 8$

8 $3(5x + 7x) + 64 : 8 = 17 - (9 - 9x)$

9 $7 - 6x = 15 + [11 + 4x - (12x + 9)]$

10 $-17 + [9x - 12 - (7 - 11x)] = 24 - [-3x - (16 + 7x)]$

11 $11,4 - 3,6x = (5,9x - 8,2) \cdot 3 - 12,3x$

12 $\frac{x}{3} - \frac{x}{12} = 9 + \frac{x}{2} - \frac{5}{8}x$

13 $17x - 4(x - 3) = 8(3x - 6) - 3(2 + 4x)$

14 $15x + 3[2x + 3(8 - x)] = 29 + 11x$

15 $7 \cdot \left(\frac{x}{4} - 17 \right) - 5 \cdot \left(\frac{x}{3} + 6 \right) = \frac{x}{6} - 104$

16 $\frac{3}{5} \cdot \left(2 - \frac{1}{6}x \right) - \frac{5}{8} \cdot \left(\frac{4}{7}x + 2 \right) = \frac{1}{7} \cdot (7 - 2x)$

17 $57 + 7x - 2 \cdot (9x - 13) = 111 - 7x - [17x - 4 \cdot (5 + 2x)]$

Lösungen

1) $IL = \{0\}$

2) $IL = \{ \}$

3) $IL = \{2\}$

4) $IL = \{3\}$

5) $IL = \{-1,531\}$

6) $IL = \{90\}$

7) $IL = \{ \}$

8) $IL = \{0\}$

9) $IL = \{5\}$

10) $IL = \{7,6\}$

11) $IL = \{4\}$

12) $IL = \{24\}$

13) $IL = \{-66\}$

14) $IL = \{-43\}$

15)

$$7 \cdot \left(\frac{x}{4} - 17 \right) - 5 \cdot \left(\frac{x}{3} + 6 \right) = \frac{x}{6} - 104$$

$$\frac{7}{4}x - 119 - \frac{5}{3}x - 30 = \frac{1}{6}x - 104 \Rightarrow -\frac{1}{12}x = 45 \Rightarrow x = -540 \Rightarrow IL = \{-540\}$$

16)

$$\frac{3}{5} \cdot \left(2 - \frac{1}{6}x \right) - \frac{5}{8} \cdot \left(\frac{4}{7}x + 2 \right) = \frac{1}{7} \cdot (7 - 2x)$$

$$\frac{6}{5} - \frac{1}{10}x - \frac{5}{14}x - \frac{5}{4} = 1 - \frac{2}{7}x \Rightarrow -\frac{6}{35}x = \frac{21}{20} \Rightarrow x = -\frac{49}{8} \Rightarrow IL = \left\{ -\frac{49}{8} \right\}$$

17)

$$57 + 7x - 2 \cdot (9x - 13) = 111 - 7x - [17x - 4 \cdot (5 + 2x)]$$

$$57 + 7x - 18x + 26 = 111 - 7x - [17x - 20 - 8x]$$

$$83 - 11x = 111 - 7x - 9x + 20 \Rightarrow 5x = 48 \Rightarrow x = 9,6 \Rightarrow IL = \{9,6\}$$