

Test - Gleichungen lösen

Name: _____

Datum: _____

1. Löse die Gleichungen - gib die Lösungsmenge an.

$G=Z=\{\dots, -2, -1, 0, 1, 2, 3, \dots\}$

$$\begin{aligned} \text{a) } 8+4x &= 6x-12 && | -4x \\ 8 &= 2x-12 && | +12 \\ 20 &= 2x && | :2 \\ \underline{x} &= \underline{10} \\ L &= \{10\} \end{aligned}$$

$$\begin{aligned} \text{b) } (x-4)(x+1) &= (x-2)(x-3) \\ x^2 + x - 4x - 4 &= x^2 - 3x - 2x + 6 && | -x^2 \\ -3x - 4 &= -5x + 6 && | +5x \\ 2x - 4 &= 6 && | +4 \\ 2x &= 10 && | :2 \\ \underline{x} &= \underline{5} && L = \{5\} \end{aligned}$$

$$\begin{aligned} \text{c) } (x-2)^2 &= (x+6)^2 \\ x^2 - 4x + 4 &= x^2 + 12x + 36 && | -x^2 \\ -4x + 4 &= 12x + 36 && | +4x \\ 4 &= 16x + 36 && | -36 \\ -32 &= 16x && | :16 \\ \underline{x} &= \underline{-2} && L = \{-2\} \end{aligned}$$

$$\begin{aligned} \text{d) } x(x+5) &= (x+2)^2 \\ x^2 + 5x &= x^2 + 4x + 4 && | -x^2 \\ 5x &= 4x + 4 && | -4x \\ \underline{x} &= \underline{4} && L = \{4\} \end{aligned}$$

2. Korrigiere den Fehler in jeder Aufgabe und rechne sie richtig zu Ende.

$$\begin{aligned} \text{a) } (x-4)(x-6) &= (x+2)(x-8) && | T \\ x^2 - 6x - 4x + 24 &= x^2 - 8x + 2x - 16 && | T \\ x^2 - 10x + 24 &= x^2 - 6x - 16 && | -x^2 \\ \underline{-10x + 24} &= \underline{-6x - 16} && | -6x \quad | +6x \\ \underline{-4x + 24} &= \underline{-16} && | -24 \\ \underline{-4x} &= \underline{-40} && | :4 \quad | :(-4) \\ \underline{x} &= \underline{+10} \end{aligned}$$

$$\begin{aligned} \text{b) } (x-2)^2 &= (x+5)^2 \\ x^2 - 4x + 4 &= x^2 + 10x + 25 && | -x^2 \\ -4x + 4 &= 10x + 25 && | +4x \\ 4 &= 14x + 25 && | -25 \\ \underline{-21} &= \underline{14x} && | :14 \\ \underline{-1,5} &= \underline{x} \end{aligned}$$

$$\begin{aligned} \text{c) } x(x-8) &= (x-5)(x-6) && | T \\ x^2 - 8x &= x^2 - 6x - 5x + 30 && | T \\ x^2 - 8x &= x^2 - 11x + 30 && | -x^2 \\ -8x &= -11x + 30 && | +11x \\ \underline{+3x} &= \underline{30} && | :(-3) \quad | :3 \\ \underline{x} &= \underline{+10} \end{aligned}$$