Arithmetik – Lineare Gleichungen mit drei Variablen

Lösungsblatt

Lösen Sie folgende Gleichungen über die Grundmenge G = R!

I: $5x - 4y + 3z = 4$
II: $4x + 6y - z = 9$
III: $3x - 2y + 4z = 5$

I: $5x - 4y + 3z = 4$
II: $4x + 6y - z = 9 \quad | \cdot 3$
I: $5x - 4y + 3z = 4$
II: $12x + 18y - 3z = 27$
I`: $17x + 14y = 31$

II: $4x + 6y - z = 9 \quad | \cdot 4$
III: $3x - 2y + 4z = 5$
II: $16x + 24y - 4z = 36$
III: $3x - 2y + 4z = 5$
II`: $19x + 22y = 41$

I`: $+17x + 14y = 31 \quad | \cdot (-22)$
II`: $19x + 22y = 41 \quad | \cdot (14)$
I´: $-374x - 308y = -682$
II`: $+266x + 308y = +574$
$-108x = -108 \quad | : (-108)$
$x = +1$

II`: $19x + 22y = 41$
$19 \cdot 1 + 22y = +41$
$19 + 22y = +41 \quad | -19$
$+22y = +22 \quad | : 22$
$y = +1$

I: $5x - 4y + 3z = 4$
$5 \cdot 1 - 4 \cdot 1 + 3z = 4$
$5 - 4 + 3z = 4 \quad | -1$
$+3z = +3 \quad | : 3$
$z = +1$
$L = \{+1, +1, +1\}$

I: $4x - 3y - 3z = -3$
II: $8x + 5y + 6z = +53$
III: $2x + 4y - 5z = -10$

I: $4x - 3y - 3z = -3 \quad | \cdot 2$
II: $8x + 5y + 6z = +53$
I: $8x - 6y - 6z = -6$
II: $8x + 5y + 6z = +53$
I`: $+16x - y = +47$

II: $8x + 5y + 6z = +53 \quad | \cdot 5$
III: $2x + 4y - 5z = -10 \quad | \cdot 6$
II: $+40x + 25y + 30z = +265$
III: $+12x + 24y - 30z = -60$
II`: $+52x + 49y = +205$

I`: $+16x - y = +47 \quad | \cdot 49$
II`: $+52x + 49y = +205$
I`: $+784x - 49y = +2303$
II`: $+52x + 49y = +205$
$+836x = +2308 \quad | : 836$
$x = +3$

I`: $+16x - y = +47$
$16 \cdot 3 - y = +47$
$48 - y = +47 \quad | -48$
$-y = -1 \quad | \cdot (-1)$
$y = +1$

I: $4x - 3y - 3z = -3$
$4 \cdot 3 - 3 \cdot 1 - 3z = -3$
$12 - 3 - 3z = -3 \quad | -9$
$-3z = -12 \quad | : (-3)$
$z = +4$
$L = \{+3, +1, +4\}$

Autor: Robert Kohout | **Thema:** Gleichungen, Lineare Gleichungen mit drei Variablen