Gleichungssysteme mit 2 Variablen

G.Roolfs

$$
\begin{array}{rcr}
3x + y & = & 5 \\
-3x + y & = & -1 \\
\hline
\end{array}
$$

$$\left.\begin{array}{rcr} 3x + y & = & 5 \\ -3x + y & = & -1 \end{array}\right\} +$$

$$\left.\begin{array}{rcr} 3x + y &=& 5 \\ -3x + y &=& -1 \end{array}\right\} +$$

$$2y = 4$$

$$\left.\begin{array}{rcr} 3x + y &=& 5 \\ -3x + y &=& -1 \end{array}\right\} +$$

$$2y = 4$$
$$y = 2$$

$$\left.\begin{array}{rcr}
3x + y &=& 5 \\
-3x + y &=& -1
\end{array}\right\} +$$

$$2y = 4$$
$$y = 2$$
$$x = 1$$

$$\begin{aligned} x \; - \; 2y \; &= \; 3 \\ 4x \; + \; 3y \; &= \; 23 \end{aligned}$$

$$\begin{aligned} x \;-\; 2y \;&=\; 3 \qquad | \cdot (-4) \\ 4x \;+\; 3y \;&=\; 23 \end{aligned}$$

$$
\begin{aligned}
x \;-\; 2y &= 3 \qquad | \cdot (-4) \\
4x \;+\; 3y &= 23 \\
\hline
-\,4x
\end{aligned}
$$

$$
\begin{aligned}
x \; - \; 2y \; &= \; 3 \qquad | \cdot (-4) \\
4x \; + \; 3y \; &= \; 23 \\
\hline
-\,4x \; + \; 8y \; &=
\end{aligned}
$$

$$
\begin{array}{rcll}
x - 2y &=& 3 & \quad | \cdot (-4) \\
4x + 3y &=& 23 & \\
\hline
-4x + 8y &=& -12 &
\end{array}
$$

$$\begin{array}{rcl} x \;-\; 2y \;=\; 3 & \quad & |\cdot(-4) \\ 4x \;+\; 3y \;=\; 23 & & \\ \hline -4x \;+\; 8y \;=\; -12 & & \\ 4x & & \end{array}$$

$$
\begin{array}{rcll}
x - 2y &=& 3 & \quad | \cdot (-4) \\
4x + 3y &=& 23 & \\
\hline
-4x + 8y &=& -12 & \\
4x + 3y &=& &
\end{array}
$$

$$
\begin{aligned}
x \;-\; 2y \;&=\; 3 \qquad &| \cdot (-4) \\
4x \;+\; 3y \;&=\; 23 &
\end{aligned}
$$

$$
\begin{aligned}
-4x \;+\; 8y \;&=\; -12 \\
4x \;+\; 3y \;&=\; 23
\end{aligned}
$$

$$
\begin{array}{rcll}
x - 2y &=& 3 & \quad | \cdot (-4) \\
4x + 3y &=& 23 \\
\hline
-4x + 8y &=& -12 \\
4x + 3y &=& 23 \\
\hline
11y &=&
\end{array}
$$

$$
\begin{array}{rcrcl}
x & - & 2y & = & 3 \qquad |\cdot(-4) \\
4x & + & 3y & = & 23 \\
\hline
-4x & + & 8y & = & -12 \\
4x & + & 3y & = & 23 \\
\hline
& & 11y & = & 11
\end{array}
$$

$$
\begin{array}{rcll}
x \;-\; 2y &=& 3 & \quad | \cdot (-4) \\
4x \;+\; 3y &=& 23 & \\
\hline
-4x \;+\; 8y &=& -12 & \\
4x \;+\; 3y &=& 23 & \\
\hline
11y &=& 11 & \\
y &=& 1 &
\end{array}
$$

$$\begin{aligned}
x \; - \; 2y \; &= \; 3 \qquad | \cdot (-4) \\
4x \; + \; 3y \; &= \; 23 \\
\hline
-4x \; + \; 8y \; &= \; -12 \\
4x \; + \; 3y \; &= \; 23 \\
\hline
11y \; &= \; 11 \\
y \; &= \; 1 \\
x \; &= \; 5
\end{aligned}$$

$$
\begin{aligned}
5x + 2y &= 9 \\
2x - 3y &= -4
\end{aligned}
$$

$$
\begin{aligned}
5x + 2y &= 9 \qquad | \cdot 3 \\
2x - 3y &= -4
\end{aligned}
$$

$$
\begin{array}{rcrcl}
5x & + & 2y & = & 9 \qquad | \cdot 3 \\
2x & - & 3y & = & -4 \qquad | \cdot 2 \\
\hline
\end{array}
$$

$$
\begin{array}{rcrcr}
5x & + & 2y & = & 9 \quad | \cdot 3 \\
2x & - & 3y & = & -4 \quad | \cdot 2 \\
\hline
15x & & & &
\end{array}
$$

$$
\begin{array}{rcrcrl}
5x & + & 2y & = & 9 & \quad | \cdot 3 \\
2x & - & 3y & = & -4 & \quad | \cdot 2 \\
\hline
15x & + & 6y & = &
\end{array}
$$

$$
\begin{array}{rcl}
5x + 2y &=& 9 \quad | \cdot 3 \\
2x - 3y &=& -4 \quad | \cdot 2 \\
\hline
15x + 6y &=& 27
\end{array}
$$

$$
\begin{array}{rcrcr l}
5x & + & 2y & = & 9 & \quad | \cdot 3 \\
2x & - & 3y & = & -4 & \quad | \cdot 2 \\
\hline
15x & + & 6y & = & 27 & \\
4x & & & &
\end{array}
$$

$$
\begin{array}{rcrcrl}
5x & + & 2y & = & 9 & \quad | \cdot 3 \\
2x & - & 3y & = & -4 & \quad | \cdot 2 \\
\hline
15x & + & 6y & = & 27 & \\
4x & - & 6y & = & &
\end{array}
$$

$$
\begin{aligned}
5x + 2y &= 9 & &| \cdot 3 \\
2x - 3y &= -4 & &| \cdot 2 \\
\hline
15x + 6y &= 27 \\
4x - 6y &= -8
\end{aligned}
$$

$$
\begin{array}{rcrcrl}
5x & + & 2y & = & 9 & \quad | \cdot 3 \\
2x & - & 3y & = & -4 & \quad | \cdot 2 \\
\hline
15x & + & 6y & = & 27 & \\
4x & - & 6y & = & -8 & \\
\hline
19x & & & = & & \\
\end{array}
$$

$$
\begin{array}{rcrcrl}
5x & + & 2y & = & 9 & \quad | \cdot 3 \\
2x & - & 3y & = & -4 & \quad | \cdot 2 \\
\hline
15x & + & 6y & = & 27 & \\
4x & - & 6y & = & -8 & \\
\hline
19x & & & = & 19 &
\end{array}
$$

$$
\begin{array}{rcll}
5x + 2y &=& 9 & | \cdot 3 \\
2x - 3y &=& -4 & | \cdot 2 \\
\hline
15x + 6y &=& 27 & \\
4x - 6y &=& -8 & \\
\hline
19x &=& 19 & \\
x &=& &
\end{array}
$$

$$
\begin{array}{rcll}
5x + 2y &=& 9 & |\cdot 3 \\
2x - 3y &=& -4 & |\cdot 2 \\
\hline
15x + 6y &=& 27 & \\
4x - 6y &=& -8 & \\
\hline
19x &=& 19 & \\
x &=& 1 &
\end{array}
$$

$$
\begin{aligned}
5x + 2y &= 9 \quad &| \cdot 3 \\
2x - 3y &= -4 \quad &| \cdot 2 \\
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15x + 6y &= 27 \\
4x - 6y &= -8 \\
\hline
19x &= 19 \\
x &= 1 \\
y &=
\end{aligned}
$$

$$
\begin{aligned}
5x + 2y &= 9 && | \cdot 3 \\
2x - 3y &= -4 && | \cdot 2 \\
\hline
15x + 6y &= 27 \\
4x - 6y &= -8 \\
\hline
19x &= 19 \\
x &= 1 \\
y &= 2
\end{aligned}
$$

$$3x + 5y = 13$$
$$4x + 3y = 10$$

$$3x + 5y = 13$$
$$4x + 3y = 10$$

y eliminieren

$$3x + 5y = 13 \quad | \cdot 3 \qquad\qquad y \text{ eliminieren}$$
$$4x + 3y = 10$$

$$3x + 5y = 13 \quad | \cdot 3 \qquad \text{(z. B.)} \quad \textit{y eliminieren}$$
$$4x + 3y = 10$$

$$\begin{aligned}
3x + 5y &= 13 \quad | \cdot 3 \qquad \text{(z. B.)} \quad \textit{y eliminieren} \\
4x + 3y &= 10 \quad | \cdot (-5)
\end{aligned}$$

$$
\begin{aligned}
3x + 5y &= 13 \quad | \cdot 3 \qquad \text{(z.\,B.)} \quad \textit{y eliminieren} \\
\underline{4x + 3y} &\underline{= 10} \quad | \cdot (-5) \\
&\cdots \\
x &= 1 \\
y &= 2
\end{aligned}
$$