

2008

9. zeile 1

$$x^{\frac{1}{3}} \cdot x^{\frac{36}{3}} \cdot \sqrt{x^2} : x^{\frac{14}{4}} \cdot \sqrt[4]{x^{12}} - 20 = 5$$

zeile 2:

$$x^{\frac{1}{3}} \cdot x^{\frac{3}{3}} \cdot x^{\frac{12}{4}} - 20 = 5$$

zeile 3:

$$\frac{x^{\frac{1}{3} + \frac{2}{3} + \frac{12}{4}}}{x^{50}} = 25$$

$$\frac{x^{\frac{17}{3}}}{x^{50}} = 25$$

zeile 4:

$$x^{-46} = 25$$

2009

9

zeile 1:

$$\frac{8y^{\frac{3}{5}} \cdot \sqrt[3]{y}}{2} + 2 = \sqrt{4x^2} \quad (I) \quad 4y + \sqrt{4x^2 - 2} = 5^2$$

zeile 2:

$$\frac{8y^{\frac{3}{5}} \cdot \sqrt[3]{y}}{2} + 2 = 2x \quad (II) \quad 4y + 3x - 8 = 25$$

zeile 3:

$$0 = -x - 35 \rightarrow 0 = 5x - 35$$

Subtrahieren
 $4y = 2x - 2$
 $-4y = 3x - 33$

2009

5

Natürliche Zahlen $z \in \mathbb{N}$
Aufeinanderfolgende: $n, n+1$

$$n \cdot (n+1) = 9 \cdot (n+1) - 2n - 14$$

$$n^2 + n = 9n + 9 - 2n - 14$$

$$n^2 + n = 7n - 5 \quad | -7n + 5$$

$$n^2 - 6n + 5 = 0$$

$$(1) \quad (-6) \pm \sqrt{16} = 4 \cdot 1 \cdot 5 = 36 - 20 = 16$$

$$n_1 = \frac{-(-6) + \sqrt{16}}{2 \cdot 1} = 5 \rightarrow \text{Die andere Zahl } 5+1=6$$

$$n_2 = \frac{-(-6) - 4}{2 \cdot 1} = \frac{2}{2} = 1 \rightarrow \text{Die andere Zahl } 1+1=2$$

2012

4

$$(I) \quad 3x = 12 \rightarrow x = 4 \text{ einsetzen in (II) und (III)}$$

$$(II) \quad 24 + 2y + z = 25 \rightarrow 2y + z = 1$$

$$(III) \quad 54 - 4y + 2z = -2 \rightarrow -4y + 2z = -22 \quad | :2 \text{ teilen}$$

$$(I) \quad 2y + z = 17$$

$$\text{III} \quad \begin{array}{r} -2y + z = -11 \\ \hline 0 + 2z = 6 \\ z = 3 \end{array}$$

Additionsverfahren

$$y = 7$$

2016

$$\textcircled{36} \quad 16x^2 - 24xy + 9y^2 = (4x - 3y)^2$$

2018

$$2 \alpha) \quad (3ab)^2 + \frac{2 \cdot (3ab) \cdot \frac{1}{4}c^2}{4} + \left(\frac{1}{4}c^2\right)^2 = (3ab + \frac{1}{4}c^2)^2$$

$$9a^2b^2 + 3ab^3c^2 + \frac{1}{4}c^4 = (3ab^2 + \frac{1}{2}c^2)^2$$

$$b) \quad 625z^2 - 30yz + 36y^2 = (25z - 6y)^2$$

$$(25z)^2 - 2(25z) \cdot 6y + 6y^2 = (25z - 6y)^2$$

$$10. \alpha) \quad \begin{cases} C & (E) \quad 2x + 2y = 64 \rightarrow x + y = 32 \\ & x + 3y = 60 \end{cases}$$

$$b) \quad \begin{cases} x = 32 - y \\ 32 - y + 3y = 60 \rightarrow 32 + 2y = 60 \quad | -32 \\ 2y = 28 \\ y = 14 \\ x = 18 \end{cases}$$

2019

47. a

$$\alpha) \quad (6a - 9d)^2 = 36a^2 - 108ad + 81d^2$$

$$(\downarrow 6a)^2 - 2(6a)(9d) + (\downarrow 9d)^2$$

$$b) \quad \frac{(a+b)^2 \cdot (a-b)^2}{a^2 - b^2} = \frac{(a+b)^2 (a-b)^2}{(a-b)(a+b)} = (a+b)(a-b) = a^2 - b^2$$

Für Vereinfachung ZUERST Faktorisieren!!

2013

(3)

$x \in \rightarrow 11\text{kg Roggenmehl}$
 $y \in \rightarrow 11\text{kg Weizenmehl}$

$$\left. \begin{array}{l} 29,4 \cdot x + 12,6y = 43,89 \\ 1 \cdot x + 1 \cdot y = 1,75 \end{array} \right\} \begin{array}{l} x = 1,30 \\ y = 0,45 \end{array}$$

(7)

$$\frac{2x-1}{x-2} + \frac{3}{x-2} = (x-2)(x+2)^{-1}$$

$$\frac{2x-1}{x-2} + \frac{3}{x-2} = (x-2) \cdot \frac{1}{x+2}$$

$$\frac{(x-2)(x+2) \cdot 2x-1}{x-2} + \frac{3}{x-2} = (x-2) \cdot \frac{1}{x+2} \cdot (x-2)(x+2)$$

$$(x+2)(2x-1) + (x+2) \cdot 3 = (x-2)(x-2)$$

$$2x^2 - x + 4x - 2 + 3x + 6 = x^2 - 4x + 4$$

$$2x^2 + 6x + 4$$

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

$$x^2 + 10x = 0 \quad \text{faktorisieren}$$

$$x(x+10) = 0 \quad \begin{array}{l} x=0 \\ x+10=0 \quad x=-10 \end{array}$$

$$\underline{\underline{L = \{0, -10\}}}$$

$$D: \begin{array}{l} x-2 \neq 0 \\ x+2 \neq 0 \end{array}$$

$$D = \mathbb{R} \setminus \{2, -2\}$$

$$\text{Gemeinsame Nenner} \\ (x-2)(x+2)$$