

1. Gib die Lösungsmenge an.

a) $\frac{3}{2}y^2 - \frac{2}{3} = 0$ $\frac{3}{2}y^2 = \frac{2}{3}$ $y^2 = \frac{4}{9}$ $y = \pm \frac{2}{3}$ $\mathbb{L} = \left\{ \frac{2}{3}, -\frac{2}{3} \right\}$

b) $\frac{3}{2}y^2 + \frac{2}{3} = 0$ $\frac{3}{2}y^2 = -\frac{2}{3}$ $y^2 = -\frac{4}{9}$ $y = \sqrt{-\frac{4}{9}} \leftarrow \text{negativ}$ $\mathbb{L} = \{ \}$

c) $\frac{2}{3} - \frac{3}{2}y^2 = 0$ $\frac{2}{3} = \frac{3}{2}y^2$ $\frac{3}{2}y^2 = \frac{2}{3}$ weiter wie 1a. $\mathbb{L} = \left\{ \frac{2}{3}, -\frac{2}{3} \right\}$

2. Gib die Lösungsmenge an.

a) $\frac{9}{4}y^2 = \frac{2}{3} \cdot \frac{3}{2}$ $\frac{9}{4}y^2 = \frac{6}{6}$ $\frac{9}{4}y^2 = 1$ $y^2 = \frac{4}{9}$ $y = \pm \frac{2}{3}$ $\mathbb{L} = \left\{ -\frac{2}{3}, +\frac{2}{3} \right\}$

b) $\frac{9}{4}y^2 = \frac{2}{3} : \frac{2}{3}$ $\frac{9}{4}y^2 = \frac{2 \cdot 3}{3 \cdot 2} = \frac{9}{4}y^2 = \frac{6}{6}$ weiter wie 2a $\mathbb{L} = \left\{ -\frac{2}{3}, +\frac{2}{3} \right\}$

c) $\frac{9}{4}y^2 = \frac{2}{3} + \frac{2}{3}$ $\frac{9}{4}y^2 = \frac{2+2}{3}$ $\frac{9}{4}y^2 = \frac{4}{3}$ $y^2 = \frac{16}{27}$ $y = \pm \sqrt{\frac{4}{27}} = \pm \frac{2}{3\sqrt{3}}$ $\mathbb{L} = \left\{ -\frac{2}{3\sqrt{3}}, +\frac{2}{3\sqrt{3}} \right\}$

d) $\frac{9}{4}y^2 = \frac{2}{3} - \frac{2}{3}$ $\frac{9}{4}y^2 = 0$ $y^2 = 0$ $y = 0$ $\mathbb{L} = \{ 0 \}$

Hausaufgaben „Gleichungen umformen“

Vor- und Nachname: «Vorname» «Name»

Klasse:

Datum:

1. Gib die Lösungsmenge an.

a) $\frac{2}{3}m^2 - \frac{3}{2} = 0$ $\frac{2}{3}m^2 = \frac{3}{2}$ $m^2 = \frac{3}{2} : \frac{2}{3}$ $m^2 = \frac{3 \cdot 3}{2 \cdot 2}$ $m = \pm \frac{3}{2}$ $\mathbb{L} = \left\{ \pm \frac{3}{2} \right\}$

b) $-\frac{3}{2}n^2 + \frac{2}{3} = 0$ $\frac{2}{3} = \frac{3}{2}n^2$ $n^2 = \frac{2}{3} : \frac{3}{2}$ $n^2 = \frac{2 \cdot 2}{3 \cdot 3}$ $n = \pm \frac{2}{3}$ $\mathbb{L} = \left\{ \pm \frac{2}{3} \right\}$

c) $\frac{3}{2} - \frac{2}{3}p^2 = 0$ $\frac{3}{2} = \frac{2}{3}p^2$ $p^2 = \frac{3}{2} : \frac{2}{3}$ $p^2 = \frac{3 \cdot 3}{2 \cdot 2}$ $p = \pm \frac{3}{2}$ $\mathbb{L} = \left\{ \pm \frac{3}{2} \right\}$

2. Gib die Lösungsmenge an.

a) $\frac{1}{4}x^2 = \frac{1}{3} \cdot \frac{3}{1}$ $\frac{1}{4}x^2 = \frac{3}{3}$ $\frac{1}{4}x^2 = 1$ $x^2 = 4$ $x = \pm 2$ $\mathbb{L} = \{ \pm 2 \}$

b) $\frac{1}{4}y^2 = \frac{1}{9} : \frac{1}{1}$ $\frac{1}{4}y^2 = \frac{1 \cdot 1}{9 \cdot 9}$ $\frac{1}{4}y^2 = \frac{1}{81}$ $y^2 = \frac{4}{81}$ $y = \pm \frac{2}{9}$ $\mathbb{L} = \left\{ \pm \frac{2}{9} \right\}$

3. Gib die Lösungsmenge an.

a) $\frac{9}{4}a^2 - \frac{9}{4} = 0$

$\frac{9}{4}a^2 = \frac{9}{4}$

$a^2 = \frac{9 \cdot 4}{4 \cdot 9}$

$a^2 = \frac{36}{36} = 1 \quad a = \pm 1 \quad \mathbb{L} = \{\pm 1\}$

b) $\frac{9}{4} + \frac{9}{4}b^2 = 0$

$\frac{9}{4}b^2 = -\frac{9}{4}$

$b^2 = -\frac{9 \cdot 4}{4 \cdot 9}$

$b^2 = -1$, negativ $\mathbb{L} = \{\}$

c) $\frac{9}{4} - \frac{9}{4}c^2 = \frac{9}{4}$

$-\frac{9}{4}c^2 = \frac{9}{4} - \frac{9}{4}$

$-\frac{9}{4}c^2 = 0$

$c^2 = 0$

$\mathbb{L} = \{0\}$

4. Gib die Lösungsmenge an.

a) $\frac{4}{9}a^2 = \frac{4 \cdot 9}{9 \cdot 4}$

$\frac{4}{9}a^2 = 1$

$a^2 = \frac{9}{4}$

$a = \pm \frac{3}{2}$

$\mathbb{L} = \{\pm \frac{3}{2}\}$

b) $\frac{9}{4}y^2 = -\frac{9}{4} - \frac{9}{4}$

$\frac{9}{4}y^2 = \frac{-9-9}{4} = \frac{-18}{4}$

$y^2 = \frac{-18 \cdot 4}{4 \cdot 9}$

$\mathbb{L} = \{\}$

c) $\frac{9}{4}y^2 = -\frac{4}{9} + \frac{4}{9}$

$\frac{9}{4}y^2 = 0$

$y^2 = 0$

$y = 0$

$\mathbb{L} = \{0\}$

d) $\frac{9}{4}b^2 = \frac{4 \cdot 4}{9 \cdot 9}$

$\frac{9}{4}b^2 = \frac{4 \cdot 9}{9 \cdot 4}$

$b^2 = \frac{4 \cdot 9 \cdot 4}{9 \cdot 4 \cdot 9}$

$b^2 = \frac{4}{9}$

$b = \pm \frac{2}{3}$

$\mathbb{L} = \{\pm \frac{2}{3}\}$