

**Aufgabe 4**

a)

$$\begin{aligned}x^2 &= 16 && |\sqrt{\phantom{x}} \\x_{1,2} &= \pm 4\end{aligned}$$

b)

$$\begin{aligned}x^2 &= 121 && |\sqrt{\phantom{x}} \\x_{1,2} &= \pm 11\end{aligned}$$

c)

$$\begin{aligned}x^2 &= 30 && |\sqrt{\phantom{x}} \\x_{1,2} &= \pm\sqrt{30} \\x_{1,2} &\approx \pm 5,48\end{aligned}$$

d)

$$\begin{aligned}5x^2 &= 10 && | : 5 \\x^2 &= 2 && |\sqrt{\phantom{x}} \\x_{1,2} &= \pm\sqrt{2}\end{aligned}$$

e)

$$\begin{aligned}2x^2 &= -40 && | : 2 \\x^2 &= -20\end{aligned}$$

Keine Lösung

f)

$$\begin{aligned}
 9x^2 &= 49 && | :9 \\
 x^2 &= \frac{49}{9} && |\sqrt{\phantom{x}} \\
 x_{1,2} &= \pm \frac{7}{3} \\
 x_{1,2} &\approx \pm 2,33
 \end{aligned}$$

g)

$$\begin{aligned}
 x^2 &= \frac{4}{25} && |\sqrt{\phantom{x}} \\
 x_{1,2} &= \pm \frac{2}{5}
 \end{aligned}$$

h)

$$\begin{aligned}
 -x^2 &= -4 && | \cdot (-1) \\
 x^2 &= 4 && |\sqrt{\phantom{x}} \\
 x_{1,2} &= \pm 2
 \end{aligned}$$

## Aufgabe 5

a)

$$\begin{aligned}
 (x - 3)^2 &= 16 && |\sqrt{\phantom{x}} \\
 x - 3 &= \pm 4 && | + 3 \\
 x_1 &= 4 + 3 = 7 \\
 x_2 &= -4 + 3 = -1
 \end{aligned}$$

**b)**

$$\begin{aligned}
 (y + 5)^2 &= 10 && |\sqrt{\phantom{x}} \\
 y + 5 &= \pm\sqrt{10} && | - 5 \\
 y_1 &= \sqrt{10} - 5 \approx -1,84 \\
 y_2 &= -\sqrt{10} - 5 \approx -8,16
 \end{aligned}$$

**c)**

$$\begin{aligned}
 4 \cdot \left(z - \frac{1}{2}\right)^2 &= 9 && | : 4 \\
 \left(z - \frac{1}{2}\right)^2 &= \frac{9}{4} && |\sqrt{\phantom{x}} \\
 z - \frac{1}{2} &= \pm\frac{3}{2} && | + \frac{1}{2} \\
 z_1 &= \frac{3}{2} + \frac{1}{2} = 2 \\
 z_2 &= -\frac{3}{2} + \frac{1}{2} = -1
 \end{aligned}$$

**d)**

$$\begin{aligned}
 -(x + 2)^2 &= -9 && | \cdot (-1) \\
 (x + 2)^2 &= 9 && |\sqrt{\phantom{x}} \\
 x + 2 &= \pm 3 && | - 2 \\
 x_1 &= 3 - 2 = 1 \\
 x_2 &= -3 - 2 = -5
 \end{aligned}$$

**e)**

$$(x + 7)^2 = -36$$

Keine Lösung

f)

$$\begin{aligned}
 9 \cdot (x + 4)^2 &= 36 && | : 9 \\
 (x + 4)^2 &= 4 && | \sqrt{\phantom{x}} \\
 x + 4 &= \pm 2 && | - 4 \\
 x_1 &= 2 - 4 = -2 \\
 x_2 &= -2 - 4 = -6
 \end{aligned}$$

g)

$$\begin{aligned}
 -(x - 2)^2 &= 9 && | \cdot (-1) \\
 (x - 2)^2 &= -9
 \end{aligned}$$

Keine Lösung

h)

$$\begin{aligned}
 (2x - 1)^2 &= 16 && | \sqrt{\phantom{x}} \\
 2x - 1 &= \pm 4 && | + 1 \\
 2x &= \pm 4 + 1 && | : 2 \\
 x_1 &= \frac{4 + 1}{2} = 2,5 \\
 x_2 &= \frac{-4 + 1}{2} = -1,5
 \end{aligned}$$