

Lösungen Wurzelgleichungen II

Ergebnisse:

E1	Ergebnisse
a)	$\sqrt{2x+8} - \sqrt{2x-3} = 1 \Rightarrow D = \left\{x \mid x \geq \frac{3}{2}\right\}_{\mathbb{R}} \quad L = \{14\}$
b)	$\sqrt{x+10} + \sqrt{x+3} = \sqrt{4x+25} \Rightarrow D = \{x \mid x \geq -3\}_{\mathbb{R}} \quad L = \{6\}$
c)	$\sqrt{5x+2x} = 15 \Rightarrow D = \mathbb{R}_+ \quad L = \{15; 11,25\}$
d)	$\sqrt{3x-2} = \frac{1}{3}x \Rightarrow D = \mathbb{R}_+ \quad L = \{3; 12\}$
e)	$5 + \sqrt{4x+12} = 2x-1 \Rightarrow D = \{x \mid x \geq -3\}_{\mathbb{R}} \quad L = \{6\} \quad 1 \notin L$
f)	$\sqrt{2x-11} - \sqrt{x-2} = 1 \Rightarrow D = \{x \mid x \geq 5,5\}_{\mathbb{R}} \quad L = \{18\} \quad 6 \notin L$

E2	Ergebnisse
a)	$\sqrt{4(5x+8)} - 2 = \sqrt{2(5x+7)} \Rightarrow D = \left\{x \mid x \geq -\frac{7}{5}\right\}_{\mathbb{R}} \quad L = \left\{\frac{1}{5}; -\frac{7}{5}\right\}$
b)	$\sqrt{5(2x-13)} - 13 = \sqrt{8(x-1)} \Rightarrow D = \left\{x \mid x \geq 6\frac{1}{2}\right\}_{\mathbb{R}} \quad L = \{1569\} \quad 9 \notin L$
c)	$\sqrt{x+1} + \sqrt{x+6} = \sqrt{5(x+2)} \Rightarrow D = \{x \mid x \geq -1\}_{\mathbb{R}} \quad L = \{3; -1\}$
d)	$\sqrt{8x+7} - \sqrt{4x+3} = 2\sqrt{x} \Rightarrow D = \mathbb{R}_+ \quad L = \left\{\frac{1}{4}\right\} \quad -1 \notin D$
e)	$\sqrt{2x+9} = \sqrt{3x-8} + \sqrt{x-7} \Rightarrow D = \{x \mid x \geq 7\}_{\mathbb{R}} \quad L = \{8\} \quad -\frac{11}{2} \notin L$
f)	$\sqrt{5x+1} = \sqrt{6x+7} - \sqrt{x-6} \Rightarrow D = \{x \mid x \geq 6\}_{\mathbb{R}} \quad L = \{7\} \quad -\frac{6}{5} \notin L$

E3	Ergebnisse
a)	$\sqrt{x-3} = 2 \Rightarrow D = \{x \mid x \geq 3\}_{\mathbb{R}}; L = \{7\}$
b)	$\sqrt{2x^2-4} = x+4 \Rightarrow D = \{x \mid x < -\sqrt{2} \vee x > \sqrt{2}\}_{\mathbb{R}}; L = \{-2; 10\}$
c)	$\sqrt{x^2-12} - x = 3 \Rightarrow L = \emptyset$

E4	Ergebnisse
a)	$\sqrt{2-x} = 2 - \sqrt{x} \Rightarrow D = \{x \mid 0 \leq x \leq 2\}_{\mathbb{R}}; L = \{1\}$
b)	$\sqrt{2x+4} = \sqrt{2x-6} + 2 \Rightarrow D = \{x \mid x \geq 3\}_{\mathbb{R}}; L = \left\{\frac{33}{8}\right\}$
c)	$\sqrt{1-3x} + 5 = 0 \Rightarrow L = \emptyset$

E5	Ergebnisse
a)	$\sqrt{5x+6} - x = 2 \Rightarrow D = \left\{x \mid x > -\frac{6}{5}\right\}_{\mathbb{R}} ; L = \{-1; 2\}$
b)	$\sqrt{5-4x} - \sqrt{x-3} = 0 \Rightarrow L = \emptyset$
c)	$\sqrt{x+5} = 2 + \sqrt{2x-7} \Rightarrow D = \{x \mid x \geq 3,5\}_{\mathbb{R}} ; L = \{4\}$

E6	Ergebnisse
a)	$\sqrt{x-2} - 7 = \sqrt{x+5} \Rightarrow D = \{x \mid x \geq 2\}_{\mathbb{R}} \quad L = \emptyset$
b)	$\sqrt{4-3x} = \sqrt{2x-6} \Rightarrow D = \{x \mid x \geq 3 \wedge x \leq 2\}_{\mathbb{R}} \quad L = \emptyset$
c)	$\sqrt{2x+1} = 1-x \Rightarrow D = \{x \mid x \geq -0,5\}_{\mathbb{R}} \quad L = \{0\}$
d)	$\sqrt{6x+4} = \sqrt{4x-4} \Rightarrow D = \{x \mid x \geq 1\}_{\mathbb{R}} \quad L = \emptyset$

E7	Ergebnisse
a)	$2x - 2,5\sqrt{1-x^2} = 0,6 \Rightarrow D = \{x \mid -1 \leq x \leq 1\}_{\mathbb{R}} \quad L = \emptyset$
b)	$2x + \sqrt{20-x^2} = 0 \Rightarrow D = \{x \mid -\sqrt{20} < x < \sqrt{20}\}_{\mathbb{R}} ; L = \{-2\}$
c)	$x\sqrt{x} = 0,125 \Rightarrow D = \mathbb{R}_+ ; L = \{0,25\}$

E8	Ergebnis
	$\sqrt{x^2+1} = -b$ hat keine Lösung für $b > 0$; hat genau 1 Lösung für $b = -1$

E9	Ergebnis
	$a^2 + (3-a)^2 = 2,25^2 \Rightarrow L = \{0,96; 2,03\}$

E10	Ergebnis
	$k = \sqrt[3]{\frac{27}{16}} = \frac{3\sqrt[3]{4}}{4} \approx 1,19$