

Algebra Klasse 8

Klammern entfernen

1	$12 - (5 - x) = 10$	3
2	$18 - (16 - x) = 1$	-1
3	$11x - 6(2x - 1) = 14$	-8
4	$14x - (8 + 3x) \cdot 5 = 0$	-40
5	$3(9x - 5) - 7(4x - 3) = 8$	-2
6	$5(7x + 15) - 2(17x + 25) = 20$	-5
7	$3(5 - 16x) - 7(9 - 7x) = 0$	48
8	$6(5 + 6x) - (5x + 6) \cdot 7 = 3$	15
9	$23x - 7(3x - 2) = x + 2$	-12
10	$26x - 5(5x + 10) = x - 50$	Q
11	$85x - (5 + 9x) \cdot 9 = 3x - 5$	40
12	$6(5x - 4) - 3(10x + 2) = 10$	{}
13	$18 + 5(3x - 2) = 2(7x + 1)$	-6
14	$(13x - 5) \cdot 5 + 21 = (3 + 8x) \cdot 8$	28
15	$5(9x - 8) - (8 + 3x) \cdot 15 = 13$	{}
16	$5(x + 9) - 7(x - 9) = 11(x - 2)$	10
17	$8(x - 1) - 3(x - 8) = 2(5 + x)$	-2
18	$3(2x + 5) - 4(x - 5) = x + 5$	-30
19	$5(7x - 6) - 9(8x - 3) = 2(8 - 9x)$	-1
20	$7(z - 5) - 6(2 - 3z) = 12(z + 1)$	59/13
21	$(12y + 3) \cdot 4 - (9 - 7y) \cdot 5 = 8(3y - 5)$	-7/59
22	$6(5a - 1) - 13(2a + 5) = 2(7 - 2a)$	85/8
23	$5(2c + 3) - 12(6 - c) = 11(4c + 7)$	-67/11
24	$1 - (x + 1) + x = -8$	{}
25	$2 - x = (x + 6) - x + 2$	-6
26	$-x - 1 - (-x + 3) = 4 + x$	-8
27	$-(-2 + x) + 3 - x = -3 - x$	8
28	$-2x - 1 = -2x + (x - 1) - 4$	4
29	$-(1 - 5x) - 1 - 4x = 2 + 3x$	-2
30	$-4x - 2 = -4 - x + (3 - 2x)$	-1
31	$-2x + 19 + 5(x - 3) = 4x + 1$	3
32	$-5x + (x + 1)(x + 4) - x^2 = 4$	Q
33	$-2x - 39 - (2x - 19) = -4 - 2x$	-8
34	$-(-3x + 5) + 4(-2x + 3) + 3x = 2$	2,5
35	$-4x + 4(1 + 2x) + 5(-x - 1) = -2$	1
36	$-21 + 4x^2 + x = 4 + 4(x + x^2 - 4) - 2x$	-9
37	$15 - (7 - 2x^2 + 3x) - 2x^2 - 2x = -4 - 4x$	12

Doppelklammern entfernen

38	$2x - 2 + (-7 + 2x)(x + 2) = 2x^2 - 4$	-12
39	$-(-5 + x)(2 + 2x) - 2x + 2x^2 = 2 + 8x$	4
40	$-2x^2 + x - (1 - x)(-11 + 2x) = -3 - 10x$	7
41	$(-x + 1)(2x - 2) + 2x^2 - 3x + 2 = 3x - 2$	1
42	$-2(1 - 5x) - x + (x - 2)(-9 + x) = x^2 + 3$	6,5
43	$-3x + 2(-3x + 3x^2 - 4) + 8 - 6x^2 = 30 - 7x$	-15
44	$(x+1)(x+7) = (x+2)(x+3)$	-1/3
45	$2(x+2)(x+5) = (2x+7)(x+3)$	1
46	$2x^2 - (x+3)(x-3) = (x+1)^2$	4
47	$(x+3)(x-5) = (x-3)^2$	6
48	$(2x-3)^2 - (x-5)^2 - 3x(x-7) + 17 = 0$	-1/19

49	$5x(x-1) - (2x+3)^2 - (x-5)(x+3) - 6 = 0$	0
50	$(x-4)^2 + (x+5)^2 = 3x^2 - (x+3)(x+7)$	-31/6
51	$(10x-1)^2 - 64(x-1)(x+1) = (6x-1)^2$	8
52	$(5x+4)(5x-4) - (2-2x)^2 = (4x-1)^2 + (2x-8)(4x+2) - x(3x-4)$	1/4
53	$(x+2)^2 + (x-3)^2 = (2x-1)^2 + (x+1)^2 - (3x+2)(x-5)$	1/13
54	$(5x-9)^2 - (3x-2)^2 = (7-4x)^2 - (7+4x)^2 - 8x(4-2x)$	-7/6

Brüche entfernen

55	$x + \frac{x}{3} + \frac{x}{6} = 45x$	0
56	$\frac{4x+1}{26} - \frac{2x-1}{39} = 0$	-0,625
57	$\frac{x}{4} + \frac{1}{5} = \frac{x}{2} + \frac{x}{6}$	12/25
58	$\frac{2x}{3} - \frac{4x}{9} = 31 - \frac{3x}{2}$	18
59	$\frac{8x-15}{12} + \frac{3x+18}{15} = 2$	123/52
60	$\frac{2}{x} = \frac{x-3}{3x} - \frac{x+5}{4x}$	51
61	$\frac{1}{x} + \frac{2x+5}{x+6} = 2$	1
62	$\frac{2}{x-1} = \frac{1}{3}$	7
63	$\frac{7}{x-4} - \frac{2}{x-4} = 1$	9
64	$\frac{5}{x+1} = \frac{x}{x+1} + \frac{1}{2}$	3
65	$\frac{x+4}{2(x-1)} - \frac{5(x-3)}{2(x-1)} - \frac{4}{2(x-1)} = 0$	15/4
66	$\frac{5(x-3)}{12x} - \frac{2(x+1)}{15x} = 1$	-83/43
67	$\frac{1}{4} - \frac{1}{2(x+5)} = \frac{3}{x+5}$	9
68	$\frac{2}{x^2 - 4x + 4} = \frac{3}{x^2 - 4}$	10
69	$\frac{5}{x^2 - 9} - \frac{3}{x^2 - 6x + 9} = 0$	12
70	$\frac{32x-11}{15x-21} - \frac{2(x+9)}{25x-35} + \frac{16}{40x-56} = 1$	-26/79
71	$\frac{x}{x+2} + \frac{x+6}{x^2+4x+4} = 1$	2
72	$\frac{3}{2(x+1)} + \frac{3}{2(x-1)} = \frac{x+2}{x^2-1}$	1
73	$\frac{x-2}{3x+9} = \frac{2x^2-9}{6(x^2+6x+9)}$	1,5
74	$\frac{1}{x-7} + \frac{3}{x+7} = \frac{3x-5}{x^2-49}$	9
75	$\frac{5x^2-45}{5x^2-30x+45} = \frac{x+3}{x-3}$	Q

Algebra Klasse 9

Quadratische Algebragleichungen

1)	$5x^2 - 80 = 0$	± 4
2)	$5x^2 + 50x = 0$	$0 -10$
3)	$(x+3)(x-2) = 0$	$-3 2$
4)	$x^2 + 10x + 24 = 0$	$-4 -6$
5)	$x^2 + 22x + 121 = 0$	-11
6)	$x^2 + 2x + 8 = 0$	$\{$
7)	$x^2 + 6x + 8 = 0$	$-2 -4$
8)	$50x^2 - 2 = 0$	$\pm 0,2$
9)	$x^2 + 3x - 70 = 0$	$7 -10$
10)	$x^2 - 7x + 10 = 0$	$5 2$
11)	$3(x+1)(x+5) = 0$	$-1 -5$
12)	$x^2 - x - 20 = 0$	$5 -4$
13)	$x^2 - 8x + 15 = 0$	$5 3$
14)	$3x^2 - 10x + 3 = 0$	$3 1/3$
15)	$12x^2 + 3x = 0$	$0 -0,25$
16)	$5x^2 - 36x + 55 = 0$	$5 2,2$
17)	$x^2 - 9x = 0$	$0 3$
18)	$6x^2 + 13x + 6 = 0$	$-2/3 -1,5$
19)	$3x^2 + 75 = 0$	± 5
20)	$x(x-5)(x+2) = 0$	$5 -2 0$
21)	$4x^2 + x + 10 = 0$	$\{$
22)	$2x^2 + 3x - 20 = 0$	$2,5 -4$
23)	$8x^2 + 10x - 7 = 0$	$0,5 -1,75$
24)	$15x^2 - 10x = 0$	$0 2/3$
25)	$x^2 - 8x + 25 = 0$	$\{$
26)	$6x^2 - 5x - 6 = 0$	$1,5 -2/3$
27)	$4x^2 - 12x + 9 = 0$	$1,5$
28)	$x^2 - 14x + 49 = 0$	7
29)	$9x^2 - 6x + 1 = 0$	$1/3$
30)	$3x^2 - 2x - 8 = 0$	$2 -4/3$
31)	$2x^2 + 17x + 30 = 0$	$2,5 -6$
32)	$4x^2 - 9 = 0$	$\pm 1,5$
33)	$8x^2 - 85x + 225 = 0$	$-5 -5,625$
34)	$(4x-3)(3x-2)=(2x-13)(x-2)+20$	± 2
35)	$(x-5)^2 + (2x+3)^2 = (x+1)^2 + 97$	± 4
36)	$(5x+2)(x-3) - (2x+3)(x-2) = 0$	$0 4$
37)	$(x-2)^2 - (2x+3)^2 = (x-1)^2 - 6$	$0 -3,5$
38)	$(2x-1)(x+1) - (x-3)(x+5) = 20$	$-2 3$
39)	$3(x-2)(x+5) - 2(x+9)(x-1) = -18$	$1 6$
40)	$(4x-1)^2 - (3x+2)^2 = 6(x-3)^2$	$3 -19$
41)	$(5x-3)^2 - (3x+1)^2 = 15(x-2)^2$	$2 -26$

Systeme von Algebragleichungen

42	$\begin{pmatrix} 6a + 7b = 23 \\ 5a + 7b = 18 \end{pmatrix}; \begin{pmatrix} 2a - 3b = 23 \\ 2a + b = -13 \end{pmatrix}$	$5 -1$ $-2 -9$
43	$\begin{pmatrix} 7a + 5b = 3 \\ 14a + 10b = 5 \end{pmatrix}; \begin{pmatrix} 0,25a = 0,5 + 0,25b \\ 3b = 9 - 2a \end{pmatrix}$	$\{$ $3 1$
44	$\begin{pmatrix} a + 16b = 2 \\ 0,125a + 2b = 0,25 \end{pmatrix}$	∞
45	$\begin{pmatrix} a + b = 11 \\ a + c = 12 \\ b + c = 13 \end{pmatrix}; \begin{pmatrix} c = 3a - 4b - 2 \\ 2a + 3b = c + 13 \\ 5a - 9b = c - 2 \end{pmatrix}$	$5 6 7$ $3 2 -1$
46	$\begin{pmatrix} 2,4a - 2,5b = 26 \\ 1,6a + 0,9c = -3 \\ 0,5b - 1,2c = 38 \end{pmatrix}; \begin{pmatrix} a - (b + 2) = 3c + 16 \\ b - (a + c) = -2 \\ c + (a - 4) = 2b - 2 \end{pmatrix}$	$15 4 -30$ $6 0 -4$
47	$\begin{pmatrix} 3(a - 6) - 4(b + c) = -18 \\ 5a - 8(c + 2b) = 0 \\ 4(b + c) - 5(a - 1) = 5 \end{pmatrix}; \begin{pmatrix} 3a + 5b = 0 \\ 7b + 3c = 0 \\ 7a - 5c = 0 \end{pmatrix}$	$0 0 0$ ∞
48	$\begin{pmatrix} 1/3a - 1/4b = 2 \\ 1/4a + 1/5c = 3 \\ 1/2b + 1/3c = 4 \end{pmatrix}; \begin{pmatrix} 2u - 3(v - w) = 1 \\ 3(u - w) + 5v = -6 \\ u - (v + w) + 2 = 0 \end{pmatrix}$	$12 8 0$ $0 -1 1$
49	$\begin{pmatrix} -5a - b + 2c = -20 \\ -2a + 6b + 2c = 2 \\ 4a + 2b - 8c = -2 \end{pmatrix}; \begin{pmatrix} a + b = 3,3 \\ a - c = 1,3 \\ b - c = 1 \end{pmatrix}$	$5 1 3$ $1,8 1,5 $ $0,5$
50	$\begin{pmatrix} 7a + 6b + 7c = 100 \\ a - 2b + c = 0 \\ 3a + b - 2c = 0 \end{pmatrix}; \begin{pmatrix} a + b + 2c = 34 \\ a + 2b + c = 33 \\ 2a + b + c = 32 \end{pmatrix}$	$3 5 7$ $7,25 8,$ $25 9,25$
51	$\begin{pmatrix} 3a - 4b + 2c = 10 \\ 5a - 3b + 4c = 3 \\ -2a + 5b - 3c = -7 \end{pmatrix}; \begin{pmatrix} a + b + c = 6 \\ -a + 2b - 3c = -7 \\ -a - 4b + 2c = -3 \end{pmatrix}$	$2 -3 -4$ $3 1 2$
52	$\begin{pmatrix} 6a - 2b + c = -7 \\ 4a + 6b + 3c = 8 \\ -2a + b - c = -33 \end{pmatrix}$	$-451/34$ $-222/17$ $790/17$
53	$\begin{pmatrix} -2a - 9b + 4c = -36 \\ 8a + b + 4c = 44 \\ 6a + 4b - 7c = -31 \end{pmatrix}$	$0 8 9$
54	$\begin{pmatrix} -18a - 9b - 12c = 510 \\ -17a + 3b - 3c = 235 \\ 15a + 10b - 18c = -419 \end{pmatrix}$	$-17 -20$ $ -2$
55	$\begin{pmatrix} -23a + 8b - 25c = 88 \\ 18a - 8b + 16c = -98 \\ 13a + 23b - 12c = -827 \end{pmatrix}$	$-25 -14$ $ 15$
56	$\begin{pmatrix} -4a + 10b - 14c = -12 \\ 2a - 8b - 15c = -269 \\ -7a + 3b + 5c = 144 \end{pmatrix}$	$-8 11 11$

Algebra Klasse 10

Potenz-/Wurzel Algebragleichungen *

1	$2x^3 + 25 = x^3 + 150$	5
2	$3x^4 - 162 = -62 - x^4$	$\pm 56^{1/4}$
3	$x^3 + 6x = 6(x + 36)$	6
4	$4x^4 - 25x^2 = 3x^2(x^2 - 3)$	$\pm 4; 0$
5	$(x^2 - 10)(x^3 + 8) = 0$	$-2; \pm\sqrt{10}$
6	$(32 - x^5)(x^4 - 121) = 0$	$2; \pm\sqrt{11}$
7	$(x^2 - 5)(x^2 + 5) = 75$	$\pm\sqrt{10}$
8	$x^5 - 8x^2 = 8(3 - x^2)$	1,88
9	$(x - 3)^3 = 8$	5
10	$(2x - 1)^4 = 16$	-0,5; 1,5
11	$(7x - 3)^3 = 216$	1 2/7
12	$(5x - 3)^3 - 8 = 0$	1
13	$(10^7 x - 23)^9 = 10^{18}$	$1,23 \cdot 10^{-5}$
14	$\sqrt[3]{x} = 5$	125
15	$\sqrt[4]{x} = 3$	81
16	$\sqrt{x} = 9$	81
17	$\sqrt{x} = -9$	{}
18	$\sqrt{x^3} = 8$	4
19	$x\sqrt{x} = -8$	{}
20	$\sqrt[5]{x - 3} = 2$	35
21	$\sqrt[5]{x^2 - 4} = 2$	± 6
22	$x^{3/4} = 5$	8,55
23	$(x + 4)^{1/3} - 34 = 0$	39 300
24	$x^{2/5} - 3^{4/5} = 0$	± 9
25	$(5 - x)^{7/11} = (-1)^6$	4

sin-/cos-/tan-Algebragleichungen

26	$2 \sin x - 1 = 0$	30°
27	$2 \sin 3x - 1 = 0$	10°
28	$\sin x + \sqrt{2} = -\sin x$	-45°
29	$\tan(5x - 2) = 100$	0,71
30	$3 \tan^2 x - 1 = 0$	$\pm 30^\circ$
31	$2 \cos(3x - 1) = 1,1$	0,66
32	$3 \tan(x/2) + 3 = 0$	-90°
33	$\sin(x) \cdot \cos(x) \cdot x = 0$	$0^\circ; 90^\circ$
34	$\cos(1,3x) - 0,2 = -0,5$	$103,41^\circ$
35	$x \cdot \cos(x) - 0,5x = 0$	$0^\circ; 60^\circ$

Exponential-Algebragleichungen

36	$2 \cdot 3^x = 0,8$	-0,83
37	$5 \cdot \left(\frac{2}{3}\right)^x = 0,4$	6,23
38	$\frac{2}{3} \cdot \left(\frac{7}{5}\right)^x = \sqrt{2}$	2,24
39	$4 + 3 \cdot 2^x = 6,9$	-0,05
40	$3 \cdot 2^{x-4} = 7$	5,22
41	$2,8 \cdot 1,6^{1-x} = 3,2$	0,72
42	$4 \cdot 1,5^{2x-1} = 6,5$	1,10
43	$5 \cdot 2^{-3x+2} = 11$	-0,29
44	$\frac{4}{3} \cdot 3^{1-x} = 2$	0,63
45	$0,2 \cdot 0,3^{x+1} = 0,3$	-1,34
46	$\sqrt{2} \cdot \left(\frac{7}{2}\right)^{2x+1} = \sqrt{8}$	-0,22
47	$\frac{3}{5} \cdot \left(\frac{3}{5}\right)^{3x+5} = 35$	-4,32
48	$5^{x+1} = 8^{2x}$	0,63
49	$2,8^{3x} \cdot 1,5^x = 10$	0,66
50	$0,4 \cdot 3,2^x = 2^{3x-1}$	-0,24
51	$3^{4x} \cdot 4^x = 5^{x+2}$	0,77

Logarithmus-Algebragleichungen

52	$\log_4 x = 0,5$	2
53	$\log_{0,5} x = 4$	1/16
54	$\log_{\sqrt{2}} x = 6$	8
55	$\log_{\frac{3}{4}} x = 2$	9/16
56	$\log_{\frac{2}{3}} x = -4$	81/16
57	$\log_5(x-3) = 10$	$5^{10} + 3$
58	$\log_7(4-x) = 80$	$4 - 7^{80}$
59	$\ln(x+3) = 7,56$	1916,85
60	$\log_4(2x+6) - \log_4(x-2) = 4$	2,04
61	$\log_3(x-3) - \log_3(x-5) = \log_3(2x-8)$	5,78; 3,72
62	$0,5 \ln 2x - \ln 0,5x = 0$	8
63	$\log(x-8) + \log(x+2) = \log(2x+4)$	10; [-2]
64	$\log_a x^3 + \log_a x - \log_a x^2 = 0$	1; [-1]
65	$\log_4 x^3 = 3 + \log_4 2$	$\sqrt[3]{128}$
66	$\log_7(x-2) + \log_7(x+2) - \log_7(3x-10) = \log_7(x-2)$	6; [2]
67	$0,25 \cdot \log_3 x - \log_3 x^2 = \log_3 \sqrt[3]{2} - \frac{1}{3} \log_3 x - \log_3 4^3$	16

* *Achtung:* Haben die Exponenten gerade Nenner, gelten die Potenzgesetze nur falls $a > 0$ ist: $2 = ((-8)^2)^{1/6} \neq (-8)^{2/6} = (-8)^{1/3} = -2$.

Algebra wiederholung Klasse 10

Lineare Algebragleichungen

- 1) $5x + 6 = 3x + 8$ 1
 2) $\frac{3}{4}x + \frac{5}{6} = 5x - \frac{125}{3}$ 10
 3) $\frac{6x-7}{4} + \frac{3x-5}{7} = \frac{5x-78}{28}$ -9/49
 4) $2(3x-7) - 4(3x-2) = 6(5x+9) - 12$ -4/3
 5) $\sqrt{2}x - \sqrt{3} = \sqrt{5}$ 2,81

Algebragleichungen mit Brüchen

- 6) $\frac{1}{x-3} + \frac{1}{x+3} = \frac{10}{x^2-9}$ 5
 7) $\frac{1}{x-2} = \frac{3}{x+2} - \frac{6x}{x^2-4}$ {}
 8) $\frac{2x-1}{x+1} = \frac{2x}{x-1} + \frac{5}{x}$ -0,66|0,76
 9) $\frac{x^2-8}{x^2-4} + \frac{2}{x+2} = \frac{5}{x-2}$ -3,42|6,42
 10) $\frac{34}{3x+7} + 5 = 2x - 3$ 4,79;-3,51

Quadratische Algebragleichungen

- 11) $x^2 - 5x + 3 = 0$ 4,30|0,70
 12) $-x^2 + 6x - 8 = 3x + 7$ {}
 13) $2x^2 - x - 1 = 0$ -0,5|1
 14) $0,5x^2 - 16x = 5$ -0,31|32,31
 15) $\sqrt{3}x^2 + \sqrt{5}x = 12$ -3,36|2,07

Potenz-/Wurzel-Algebragleichungen *

- 16) $(1-3x)^4 = 625$ -4/3|2
 17) $\sqrt{x} \cdot \sqrt[3]{x} \cdot \sqrt[4]{x} = 6$ 5,23
 18) $2,4 \cdot x^{\frac{1}{5}} - 3 = 0,4 \cdot x^{\frac{1}{5}}$ 243/32
 19) $\sqrt[5]{x+2} = (8x)^{\frac{1}{10}}$ 2
 20) $4 \cdot \sqrt{x} - \sqrt[6]{64x^3} = 6$ 9
 21) $\sqrt{x^{12}} + 126 = (2 \cdot \sqrt[5]{x^5})^6$ $\sqrt[6]{2}; [-\sqrt[6]{2}]$
 22) $3(x+4)^{\frac{1}{3}} = 4(x-33)^{\frac{1}{3}}$ 60
 23) $34 - 7 \cdot \left(\frac{4x-1}{x-6}\right)^{\frac{1}{3}} = -1$ 749/121
 24) $(28 + x^2)^{\frac{3}{5}} = 8$ ± 8
 25) $(x^{\frac{1}{2}} - 2)^{\frac{1}{4}} = (1 - x^{\frac{1}{2}})^{\frac{1}{4}}$ 9/4
 26) $(x^{-\frac{3}{2}} - 4)^{-\frac{1}{2}} = 0,5$ 1/4
 27) $(x^{-\frac{1}{2}} + 79)^{\frac{3}{4}} - 27 = 0$ 1/4

- 28) $(6x^{\frac{3}{4}} + 181)^{-\frac{2}{3}} = \frac{1}{49}$ 81*
 29) $(15 \cdot \sqrt[3]{x^{-2}} + 121)^{\frac{3}{4}} = 64$ $\pm 1/27$
 30) $(125x^{\frac{3}{4}} + 316)^{-\frac{2}{3}} = \frac{1}{49}$ 81/625*
 31) $\left[(81x)^{\frac{1}{4}} - 3\right]^{-\frac{5}{2}} = \frac{1}{243}$ 256
 32) $(19 + 2 \cdot \sqrt[3]{7x^2 + 1})^{-\frac{1}{3}} = \frac{1}{3}$ ± 3

Exponential-Algebragleichungen

- 33) $2^x = 10$ 3,32
 34) $5 \cdot 4^{2x+1} = 26$ 0,10
 35) $3^{x+1} = 2 \cdot 3^{2x}$ 0,37
 36) $18 \cdot 2^{7x-1} = 2 \cdot 5^{2x-1}$ -1,91
 37) $4e^{2x} = 5$ 0,11
 38) $2^x + 2^{x+1} + 2^{x+2} = 2$ -1,81
 39) $100(14^{2x}) + 6 = 10$ -0,61
 40) $100x^{2-6x+1} + 5 = 10$ 0,11|5,89

Logarithmus-Algebragleichungen

- 41) $\ln x = 3$ 20,09
 42) $2 \cdot \ln 3x = 4$ 2,46
 43) $\ln(x-2) + \ln(2x-3) = 2 \ln x$ 6|1
 44) $\log_4(3x-7)^2 = 10$ 344|[-338,67]
 45) $\ln(x^2 - 6x - 16) = 5$ 16,17|-10,17

Trigonometrische Algebragleichungen

- 46) $2 \sin x - 1 = 0$ 30°
 47) $2 \sin 3x - 1 = 0$ 10°
 48) $\sin x + \sqrt{2} = -\sin x$ -45°
 49) $3 \tan^2 x - 1 = 0$ 30°|-30°
 50) $2 \sin^2 x - \sin x - 1 = 0$ 90°|-30°
 51) $2 \cos(3x-1) = 0$ 0,66
 52) $3 \tan(x/2) + 3 = 0$ -90°

Systeme von Algebragleichungen

- 53) $2a - b + c = 3$ 54) $6a + 2b - c = 22$ 55) $3a + 2b + 5c = -12$
 $3a + 2b - 4c = -5$ $5a - 3b + 6c = 23$ $2a - 3b - c = 12$
 $4a - 3b + 5c = 13$ $7a + b - 5c = 27$ $4a + 5b + 2c = 17$
 56) $2a + 3b + 4c = 1,4$ 57) $2,4a - 2,5b = 26$ 58) $a + 1,5b - 0,5c = 0,5$
 $3a - 2b - c = 1,2$ $1,6a + 0,9c = -3$ $1,5a - 0,5b + c = 1$
 $5a + 4b + 3c = 1,4$ $0,5b - 1,2c = 38$ $0,5a - 7,5b + 5c = 1$
 1|2|3; 4|-1|0; 485/91|149/91|-569/91; 0,3|-0,4|0,5; 15|4|-30; ∞

* Achtung: Haben die Exponenten gerade Nenner, gelten die Potenzgesetze nur falls $a > 0$ ist: $2 = ((-8)^2)^{1/6} \neq (-8)^{2/6} = (-8)^{1/3} = -2$.

Algebra wiederholung Klasse 11

Lineare Algebragleichungen

- 1) $5x - 6 = 3x - 8$ -1
 2) $\frac{3}{4}x + \frac{5}{6} = 5x - \frac{125}{3}$ 10
 3) $\frac{6x-7}{4} + \frac{3x-5}{7} = \frac{5x-78}{28}$ -9/49
 4) $2(3x-7) - 4(3x-2) = 6(5x+9) - 12$ -4/3
 5) $\sqrt{2}x - \sqrt{3} = \sqrt{5}$ 5,81

Algebragleichungen mit Brüchen

- 6) $\frac{1}{x-3} + \frac{1}{x+3} = \frac{10}{x^2-9}$ 5
 7) $\frac{1}{x-2} = \frac{3}{x+2} - \frac{6x}{x^2-4}$ {}
 8) $\frac{2x-1}{x+1} = \frac{2x}{x-1} + \frac{5}{x}$ -0,66 | 0,76
 9) $\frac{x^2-8}{x^2-4} + \frac{2}{x+2} = \frac{5}{x-2}$ -3,42 | 6,42
 10) $\frac{34}{x^2-3x+7} + 5 = 2x - 3$ 6,80

Algebragleichungen mit Beträgen

- 11) $|2x-1| = 5$ 3 | -2
 12) $|5x-6| + 3 = 10$ 2,6 | -0,5
 13) $|2x-1| = |4x+3|$ -1/3 | -2
 14) $|x^2-6x+1| = \left| \frac{3x+5}{2} \right|$ 7,69 | -0,19 | 3,5 | 1
 15) $|x| = x^2 + x - 3$ $\pm\sqrt{3} | -3 | 1$

Quadratische Algebragleichungen

- 16) $x^2 - 5x + 3 = 0$ 1
 17) $-x^2 + 6x - 8 = 3x + 7$ 15
 18) $2x^2 - x - 1 = 0$ -0,5 | 1
 19) $0,5x^2 - 16x = 5$ -0,31 | 32,31
 20) $\sqrt{3}x^2 + \sqrt{5}x = 12$ -3,36 | 2,07

Potenz-/Wurzel-Algebragleichungen

- 21) $\sqrt{x-10} - 4 = 0$ 26
 22) $\sqrt{x+1} - 3x = 1$ {}
 23) $\sqrt{x} + \sqrt{x-5} = 5$ 9
 24) $\sqrt{x+8} + \sqrt{x+15} = \sqrt{9x+40}$ 1 | -4,24
 25) $\sqrt[5]{x-10} - 4 = 0$ 1034
 26) $(9-5x)^8 - 2 = 0$ 1,58 | 2,02

- 27) $(32 - x^5)(x^4 - 121) = 0$ $2 | \pm\sqrt{11}$
 28) $\sqrt{x} \cdot \sqrt[3]{x} \cdot \sqrt[4]{x} = 6$ 5,23
 29) $x^{7/2} - 16x^{3/2} = 0$ 0 | 4 | -4

Exponential-Algebragleichungen

- 30) $2^x = 10$ 3,32
 31) $5 \cdot 4^{2x+1} = 26$ 0,10
 32) $3^{x+1} = 2 \cdot 3^{2x}$ 0,37
 33) $18 \cdot 2^{7x-1} = 2 \cdot 5^{2x-1}$ -1,91
 34) $4e^{2x} = 5$ 0,11
 35) $e^{2x} - 3e^x + 2 = 0$ Trick: Substitution
 36) $2^x + 2^{x+1} + 2^{x+2} = 2$ -1,81
 37) $100(14^{2x}) + 6 = 10$ -0,61
 38) $100^{x^2-6x+1} + 5 = 10$ 0,15 | 5,86

Logarithmus-Algebragleichungen

- 39) $\ln x = 3$ 20,09
 40) $2 \cdot \ln 3x = 4$ 2,46
 41) $\ln(x-2) + \ln(2x-3) = 2 \ln x$ 6 | 1
 42) $\log_4(3x-7)^2 = 10$ 343,67 | -339
 43) $\log_2(x-2) - \log_4(x-4) = 0$ Trick: L3
 44) $\ln(x^2 - 6x - 16) = 5$ 16,17 | -10,17
 45) $6 \cdot \log(x^2 + 1) - x = 0$ Trick: Graph

Trigonometrische Algebragleichungen

- 46) $2 \sin x - 1 = 0$ 30°
 47) $2 \sin 3x - 1 = 0$ 10°
 48) $\sin x + \sqrt{2} = -\sin x$ -45°
 49) $3 \tan^2 x - 1 = 0$ 30° | -30°
 50) $2 \sin^2 x - \sin x - 1 = 0$ 90° | -30°
 51) $2 \sin^2 x + 3 \cos x - 3 = 0$ Trick: $\sin^2 x = 1 - \cos^2 x$
 52) $2 \cos(3x-1) = 0$ 0,66
 53) $3 \tan(x/2) + 3 = 0$ -90°
 54) $4 \sin^3 x + 2 \sin^2 x - 2 \sin x + 1 = 0$ ausklammern

Systeme von Algebragleichungen

- 55) $2a - b + c = 3$ 56) $6a + 2b - c = 22$ 57) $3a + 2b + 5c = -12$
 $3a + 2b - 4c = -5$ $5a - 3b + 6c = 23$ $2a - 3b - c = 12$
 $4a - 3b + 5c = 13$ $7a + b - 5c = 27$ $4a + 5b + 2c = 17$
 58) $2a + 3b + 4c = 1,4$ 59) $2,4a - 2,5b = 26$ 60) $a + 1,5b - 0,5c = 0,5$
 $3a - 2b - c = 1,2$ $1,6a + 0,9c = -3$ $1,5a - 0,5b + c = 1$
 $5a + 4b + 3c = 1,4$ $0,5b - 1,2c = 38$ $0,5a - 7,5b + 5c = 1$
 1 | 2 | 3; 4 | -1 | ∞ ; 485/91 | 149/91 | -569/91; 0,3 | -0,4 | 0,5; 15 | 4 | -30; ∞