

Löse mit Hilfe der pq- Formel

| | | |
|--------------------|------------------------|-------------------------|
| a | b | c |
| $x^2 + 2x - 3 = 0$ | $x(x + 1) = 6$ | $x^2 + 0,5x + 2,1 = 0$ |
| d | e | f |
| $x^2 - 6x + 8 = 0$ | $x(x - 4) = 5$ | $x^2 - 0,7x + 0,1 = 0$ |
| g | h | i |
| $x^2 - 6x - 7 = 0$ | $x^2 + 3(5x + 12) = 0$ | $x^2 + 0,8x - 2,4 = 0$ |
| j | k | l |
| $x^2 - x - 6 = 0$ | $3x^2 + 21x = 24$ | $x^2 - 0,1x - 0,12 = 0$ |
| m | n | o |
| $2x^2 + 2x = 12$ | $x(x + 7) = 3x + 5$ | $0,5x^2 = 2,5x + 12$ |
| p | q | r |
| $4x^2 + 16 = 12x$ | $x(x - 9) = 3(9 - x)$ | $0,4x^2 = 2x + 5,6$ |
| s | t | u |
| $3x^2 = 90 + 3x$ | $x(x - 5) = 2(1 - 2x)$ | $1,2x^2 + 2,4 = 4,8x$ |
| v | w | x |
| $-x^2 - 9x = 20$ | $x(x - 6) = 2x - 13$ | $1,6x^2 + 3,2x = 24$ |

LÖSUNGEN

| a | b | c |
|---|--|--|
| $x^2 + 2x - 3 = 0$ $p = 2; q = -3$ $x_1 = -\frac{-2}{2} + \sqrt{4} = -1 + 2 = 1$ $x_2 = -\frac{-2}{2} - \sqrt{4} = -1 - 2 = -3$ $L = \{-3, 1\}$ | $x(x+1) = 6$ $\Leftrightarrow x^2 + x = 6 \quad -6$ $\Leftrightarrow x^2 + x - 6 = 0$ $p = 1; q = -6$ $x_1 = -\frac{1}{2} + \sqrt{\frac{25}{4}} = -\frac{1}{2} + \frac{5}{2} = \frac{4}{2} = 2$ $x_2 = -\frac{1}{2} - \sqrt{\frac{25}{4}} = -\frac{1}{2} - \frac{5}{2} = -\frac{6}{2} = -3$ $L = \{-3, 2\}$ | $x^2 + 0,5x + 2,1 = 0$ $p = 0,5; q = 2,1$ $L = \{ \}$ |
| d | e | f |
| $x^2 - 6x + 8 = 0$ $p = -6; q = 8$ $x_1 = -\frac{-6}{2} + \sqrt{1} = 3 + 1 = 4$ $x_2 = -\frac{-6}{2} - \sqrt{1} = 3 - 1 = 2$ $L = \{2; 4\}$ | $x(x-4) = 5$ $\Leftrightarrow x^2 - 4x = 5 \quad -5$ $\Leftrightarrow x^2 - 4x - 5 = 0$ $p = -4; q = -5$ $x_1 = -\frac{-4}{2} + \sqrt{9} = 2 + 3 = 5$ $x_2 = -\frac{-4}{2} - \sqrt{9} = 2 - 3 = -1$ $L = \{-1; 5\}$ | $x^2 - 0,7x + 0,1 = 0$ $p = -0,7; q = 0,1$ $x_1 = -\frac{-0,7}{2} + \sqrt{0,0225} = 0,35 + 0,15 = 0,5$ $x_2 = -\frac{-0,7}{2} - \sqrt{0,0225} = 0,35 - 0,15 = 0,2$ $L = \{0,2; 0,5\}$ |
| g | h | i |
| $x^2 - 6x - 7 = 0$ $p = -6; q = -7$ $x_1 = -\frac{-6}{2} + \sqrt{16} = 3 + 4 = 7$ $x_2 = -\frac{-6}{2} - \sqrt{16} = 3 - 4 = -1$ $L = \{-1; 7\}$ | $x^2 + 3(5x+12) = 0$ $\Leftrightarrow x^2 + 15x + 36 = 0$ $p = 15; q = 36$ $x_1 = -\frac{15}{2} + \sqrt{\frac{81}{4}} = -\frac{15}{2} + \frac{9}{2} = -\frac{6}{2} = -3$ $x_2 = -\frac{15}{2} - \sqrt{\frac{81}{4}} = -\frac{15}{2} - \frac{9}{2} = -\frac{24}{2} = -12$ $L = \{-12; -3\}$ | $x^2 + 0,8x - 2,4 = 0$ $p = 0,8; q = -2,4$ $x_1 = -\frac{0,8}{2} + \sqrt{2,56} = -0,4 + 1,6 = 1,2$ $x_2 = -\frac{0,8}{2} - \sqrt{2,56} = -0,4 - 1,6 = -2$ $L = \{-2; 1,2\}$ |
| j | k | l |
| $x^2 - x - 6 = 0$ $p = -1; q = -6$ $x_1 = -\frac{-1}{2} + \sqrt{\frac{25}{4}} = \frac{1}{2} + \frac{5}{2} = 3$ $x_2 = -\frac{-1}{2} - \sqrt{\frac{25}{4}} = \frac{1}{2} - \frac{5}{2} = -2$ $L = \{-2; 3\}$ | $3x^2 + 21x = 24 \quad -24$ $\Leftrightarrow 3x^2 + 21x - 24 = 0 \quad :3$ $\Leftrightarrow x^2 + 7x - 8 = 0$ $p = 7; q = -8$ $x_1 = -\frac{7}{2} + \sqrt{\frac{81}{4}} = -\frac{7}{2} + \frac{9}{2} = \frac{2}{2} = 1$ $x_2 = -\frac{7}{2} - \sqrt{\frac{81}{4}} = -\frac{7}{2} - \frac{9}{2} = -\frac{16}{2} = -8$ $L = \{-8; 1\}$ | $x^2 - 0,1x - 0,12 = 0$ $p = -0,1; q = -0,12 = -\frac{12}{100} = -\frac{3}{25}$ $x_1 = -\frac{-0,1}{2} + \sqrt{\frac{49}{400}} = \frac{1}{20} + \frac{7}{20} = \frac{8}{20} = \frac{4}{10} = 0,4$ $x_2 = -\frac{-0,1}{2} - \sqrt{\frac{49}{400}} = \frac{1}{20} - \frac{7}{20} = -\frac{6}{20} = -\frac{3}{10} = -0,3$ $L = \{-0,3; 0,4\}$ |
| m | n | o |

| | | |
|--|---|--|
| $2x^2 + 2x = 12$ $\Leftrightarrow 2x^2 + 2x - 12 = 0$ $\Leftrightarrow x^2 + x - 6 = 0$ $\Leftrightarrow x = 2 \vee x = -3$ $L = \{-3; 2\}$ | $x(x+7) = 3x+5$ $\Leftrightarrow x^2 + 7x = 3x+5$ $\Leftrightarrow x^2 + 4x - 5 = 0$ $\Leftrightarrow x = 1 \vee x = -5$ $L = \{-5; 1\}$ | $0,5x^2 = 2,5x + 12$ $\Leftrightarrow x^2 = 5x + 24$ $\Leftrightarrow x^2 - 5x - 24 = 0$ $\Leftrightarrow x = 8 \vee x = -3$ $L = \{-3; 8\}$ |
| p | q | r |
| $4x^2 + 16 = 12x$ $\Leftrightarrow 4x^2 - 12x + 16 = 0$ $\Leftrightarrow x^2 - 3x + 4 = 0$ | $x(x-9) = 3(9-x)$ $x_1 = \sqrt{1,75} + 1,5 = 2,82$ $x_2 = -\sqrt{1,75} + 1,5$ $= 0,18$ $L = \{2,82; 0,18\}$ | $0,4x^2 = 2x + 5,6$ $\Leftrightarrow x^2 = 5x + 14$ $\Leftrightarrow x^2 - 5x - 14 = 0$ $\Leftrightarrow x = 7 \vee x = -2$ $L = \{-2; 7\}$ |
| s | t | u |
| $3x^2 = 90 + 3x$ $\Leftrightarrow 3x^2 - 3x - 90 = 0$ $\Leftrightarrow x^2 - x - 30 = 0$ $\Leftrightarrow (x-6)(x+5) = 0$ $\Leftrightarrow x = 6 \vee x = -5$ $L = \{-5; 6\}$ | $x(x-5) = 2(1-2x)$ $\Leftrightarrow x^2 - 5x = 2 - 4x$ $\Leftrightarrow x^2 - x - 2 = 0$ $\Leftrightarrow x = 2 \vee x = -1$ $L = \{-1; 2\}$ | $1,2x^2 + 2,4 = 4,8x$ $\Leftrightarrow 1,2x^2 - 4,8x + 2,4 = 0$ $\Leftrightarrow x^2 - 4x + 2 = 0$ $x_1 = \sqrt{2} + 2$ $x_2 = -\sqrt{2} + 2$ $L = \{3,4; 0,6\}$ |
| v | w | x |
| $-x^2 - 9x = 20$ $\Leftrightarrow -x^2 - 9x - 20 = 0$ $\Leftrightarrow x^2 + 9x + 20 = 0$ $\Leftrightarrow (x+4)(x+5) = 0$ $\Leftrightarrow x = -4 \vee x = -5$ $L = \{-5; -4\}$ | $x(x-6) = 2x - 13$ $x(x-6) = 2x - 13$ $\Leftrightarrow x^2 - 6x = 2x - 13$ $\Leftrightarrow x^2 - 8x + 13 = 0$ $x_1 = \sqrt{3} + 4$ $x_2 = -\sqrt{3} + 4$ $L = \{5,7; 2,27\}$ | $1,6x^2 + 3,2x = 24$ $1,6x^2 + 3,2x = 24$ $\Leftrightarrow 1,6x^2 + 3,2x - 24 = 0$ $\Leftrightarrow x^2 + 2x - 15 = 0$ $\Leftrightarrow x = 3 \vee x = -5$ $L = \{-5; 3\}$ |