

Reinquadratische Gleichungen

Aufgabe

Lösen Sie die folgenden reinquadratischen Gleichungen:

a) $-2x^2 + 50 = 0$

d) $x^2 = 16$

g) $-5x^2 = -5$

j) $-x^2 = -16$

m) $3x^2 - 75 = 0$

p) $3x^2 = 300$

s) $3x^2 = 75$

v) $4x^2 - 4 = 0$

y) $x^2 = 4$

b) $-x^2 + 25 = 0$

e) $3x^2 - 192 = 0$

h) $-4x^2 = -144$

k) $4x^2 = 256$

n) $-x^2 + 4 = 0$

q) $-5x^2 = -245$

t) $-4x^2 = -100$

w) $5x^2 - 125 = 0$

z) $-5x^2 + 20 = 0$

c) $-4x^2 = -196$

f) $x^2 = 1$

i) $3x^2 - 147 = 0$

l) $-4x^2 + 36 = 0$

o) $-2x^2 = -162$

r) $x^2 = 81$

u) $-x^2 + 36 = 0$

x) $-4x^2 + 144 = 0$

Rechenweg

| | | | | | | | | |
|----|------------------|-----------------------|----|------------------|-----------------------|----|------------------|-----------------------|
| | $-2x^2 + 50 = 0$ | $ - 50$ | | $-x^2 + 25 = 0$ | $ - 25$ | | $-4x^2 = -196$ | $: -4$ |
| | $-2x^2 = -50$ | $: -2$ | | $-x^2 = -25$ | $: -1$ | c) | $x^2 = 49$ | $ \sqrt{}$ |
| a) | $x^2 = 25$ | $ \sqrt{}$ | b) | $x^2 = 25$ | $ \sqrt{}$ | | $x_1 = -7$ | |
| | $x_1 = -5$ | | | $x_1 = -5$ | | | $x_2 = 7$ | |
| | $x_2 = 5$ | | | $x_2 = 5$ | | | | |
| | $x^2 = 16$ | $ \sqrt{}$ | | $3x^2 - 192 = 0$ | $ + 192$ | | $x^2 = 1$ | $ \sqrt{}$ |
| d) | $x_1 = -4$ | | | $3x^2 = 192$ | $: 3$ | f) | $x_1 = -1$ | |
| | $x_2 = 4$ | | e) | $x^2 = 64$ | $ \sqrt{}$ | | $x_2 = 1$ | |
| | | | | $x_1 = -8$ | | | | |
| | $x_2 = 8$ | | | $x_2 = 8$ | | | | |
| | $-5x^2 = -5$ | $: -5$ | | $-4x^2 = -144$ | $: -4$ | | $3x^2 - 147 = 0$ | $ + 147$ |
| g) | $x^2 = 1$ | $ \sqrt{}$ | h) | $x^2 = 36$ | $ \sqrt{}$ | | $3x^2 = 147$ | $: 3$ |
| | $x_1 = -1$ | | | $x_1 = -6$ | | i) | $x^2 = 49$ | $ \sqrt{}$ |
| | $x_2 = 1$ | | | $x_2 = 6$ | | | $x_1 = -7$ | |
| | | | | | | | $x_2 = 7$ | |
| | $-x^2 = -16$ | $: -1$ | | $4x^2 = 256$ | $: 4$ | | $-4x^2 + 36 = 0$ | $ - 36$ |
| j) | $x^2 = 16$ | $ \sqrt{}$ | k) | $x^2 = 64$ | $ \sqrt{}$ | | $-4x^2 = -36$ | $: -4$ |
| | $x_1 = -4$ | | | $x_1 = -8$ | | l) | $x^2 = 9$ | $ \sqrt{}$ |
| | $x_2 = 4$ | | | $x_2 = 8$ | | | $x_1 = -3$ | |
| | | | | | | | $x_2 = 3$ | |
| | $3x^2 - 75 = 0$ | $ + 75$ | | $-x^2 + 4 = 0$ | $ - 4$ | | $-2x^2 = -162$ | $: -2$ |
| | $3x^2 = 75$ | $: 3$ | | $-x^2 = -4$ | $: -1$ | o) | $x^2 = 81$ | $ \sqrt{}$ |
| m) | $x^2 = 25$ | $ \sqrt{}$ | n) | $x^2 = 4$ | $ \sqrt{}$ | | $x_1 = -9$ | |
| | $x_1 = -5$ | | | $x_1 = -2$ | | | $x_2 = 9$ | |
| | $x_2 = 5$ | | | $x_2 = 2$ | | | | |
| | $3x^2 = 300$ | $: 3$ | | $-5x^2 = -245$ | $: -5$ | | $x^2 = 81$ | $ \sqrt{}$ |
| p) | $x^2 = 100$ | $ \sqrt{}$ | q) | $x^2 = 49$ | $ \sqrt{}$ | r) | $x_1 = -9$ | |
| | $x_1 = -10$ | | | $x_1 = -7$ | | | $x_2 = 9$ | |
| | $x_2 = 10$ | | | $x_2 = 7$ | | | | |
| | $3x^2 = 75$ | $: 3$ | | $-4x^2 = -100$ | $: -4$ | | $-x^2 + 36 = 0$ | $ - 36$ |
| s) | $x^2 = 25$ | $ \sqrt{}$ | t) | $x^2 = 25$ | $ \sqrt{}$ | u) | $-x^2 = -36$ | $: -1$ |
| | $x_1 = -5$ | | | $x_1 = -5$ | | | $x^2 = 36$ | $ \sqrt{}$ |
| | $x_2 = 5$ | | | $x_2 = 5$ | | | $x_1 = -6$ | |
| | | | | | | | $x_2 = 6$ | |
| | $4x^2 - 4 = 0$ | $ + 4$ | | $5x^2 - 125 = 0$ | $ + 125$ | | | |
| | $4x^2 = 4$ | $: 4$ | | $5x^2 = 125$ | $: 5$ | | | |
| v) | $x^2 = 1$ | $ \sqrt{}$ | w) | $x^2 = 25$ | $ \sqrt{}$ | | | |
| | $x_1 = -1$ | | | $x_1 = -5$ | | | | |
| | $x_2 = 1$ | | | $x_2 = 5$ | | | | |

$$\begin{array}{l}
 -4x^2 + 144 = 0 \quad | -144 \quad x^2 = 4 \quad |\sqrt{} \\
 -4x^2 = -144 \quad | : -4 \quad y) \quad x_1 = -2 \\
 x) \quad x^2 = 36 \quad |\sqrt{} \quad x_2 = 2 \\
 x_1 = -6 \\
 x_2 = 6
 \end{array}$$

$$\begin{array}{l}
 -5x^2 + 20 = 0 \quad | -20 \\
 -5x^2 = -20 \quad | : -5 \\
 z) \quad x^2 = 4 \quad |\sqrt{} \\
 x_1 = -2 \\
 x_2 = 2
 \end{array}$$

Lösung

a) $x_1 = -5$
 $x_2 = 5$

d) $x_1 = -4$
 $x_2 = 4$

g) $x_1 = -1$
 $x_2 = 1$

j) $x_1 = -4$
 $x_2 = 4$

m) $x_1 = -5$
 $x_2 = 5$

p) $x_1 = -10$
 $x_2 = 10$

s) $x_1 = -5$
 $x_2 = 5$

v) $x_1 = -1$
 $x_2 = 1$

y) $x_1 = -2$
 $x_2 = 2$

b) $x_1 = -5$
 $x_2 = 5$

e) $x_1 = -8$
 $x_2 = 8$

h) $x_1 = -6$
 $x_2 = 6$

k) $x_1 = -8$
 $x_2 = 8$

n) $x_1 = -2$
 $x_2 = 2$

q) $x_1 = -7$
 $x_2 = 7$

t) $x_1 = -5$
 $x_2 = 5$

w) $x_1 = -5$
 $x_2 = 5$

z) $x_1 = -2$
 $x_2 = 2$

c) $x_1 = -7$
 $x_2 = 7$

f) $x_1 = -1$
 $x_2 = 1$

i) $x_1 = -7$
 $x_2 = 7$

l) $x_1 = -3$
 $x_2 = 3$

o) $x_1 = -9$
 $x_2 = 9$

r) $x_1 = -9$
 $x_2 = 9$

u) $x_1 = -6$
 $x_2 = 6$

x) $x_1 = -6$
 $x_2 = 6$