

Gleichungen

1. LINEARE GLEICHUNGEN

1. a) $7x + 5 = 33$ b) $6x + 5 = 29$ c) $18x + 128 = 128$
d) $2x - 5 = 1$ e) $7x - 17,5 = 0$ f) $3x + 5 = 20$
2. a) $12x - 27 = 9$ b) $3x - 7 = 14$ c) $36 = x - 12$
d) $\frac{x}{5} - 5 = 2$ e) $\frac{x}{3} - 4 = 11$ f) $\frac{x}{8} + 6 = 30$
3. a) $2x - 3 - 4 = 13$ b) $3x - 5 + 9 = 16 + x$ c) $3x + 1 = x + 9$
d) $6x = 72 - 2x$ e) $14x + 3x - x = 4x + 48$ f) $20x - 36 + 2x = 3x - 17$
4. a) $20x - 36 + 2x = 3x - 17$ b) $14x - 30 - 10x - 9 - 3x = 19 - 4x + 142$
c) $9x + 12 - 6x - 13 + 2x = 8$ d) $7x - 6 + 5x - 4 + 3x - 2 + x = -4$
e) $40 - 8x - 3x + 15 = 0$ f) $-8x + 16 - 3x - 9 = -15$

2. GLEICHUNGEN MIT MULTIPLIKATIONSKLAMMERN UND BINOMISCHEN FORMELN UND MINUSKLAMMERN

1. a) $5x - 4(2 - 3x) = 22 + 7x$ b) $6(1 - 3x) + 7(4x - 3) = 35$
c) $8(3x - 5) = 60 + 20x$ d) $5x - 4(2 - 3x) = 22 + 7x$
e) $3(x + 6) + 2(x + 1) = 40$ f) $8(3x - 5) = 60 + 20x$
2. a) $5x - 4(2 - 3x) = 22 + 7x$ b) $6(1 - 3x) + 7(4x - 3) = 35$
c) $18q + 3 = 3(6,1q - 5)$ d) $5(x + 1,2) - 4 = 10x + 3$
e) $4(x + 9) - 34 = 2(x - 4) + 11$ f) $8 - 10x - 2 = 8 - 5(x + 1,4)$
3. a) $13 + 2(3x - 2) = 3$ b) $6t + 2 = 2(4t - 1) - 10$
c) $3(5 - 2x) - 8 = 24 - 5(2x + 1)$ d) $18 + 3(2x - 3) = 3$
e) $6x + 5 = 2(4x - 1) - 7$ f) $3(5 - 2x) - 7 = 25 - 5(1 + 2x)$
4. a) $(x + 3) \cdot 7 = 28$ b) $(x - 2) \cdot 5 = 25$
c) $(2x - 8) \cdot 7 = 98$ d) $(3x + 13) \cdot 3 = 156$
e) $11 \cdot (2x - 19) = 121$ f) $(4x - 17) \cdot 3 + 5 = 14$
5. a) $(x + 3)^2 = (x - 1)^2$ b) $(x + 6)^2 - (x - 5)^2 = 0$
c) $(2x + 4)^2 = (2x - 8)^2$ d) $(2x + 3)^2 - (x + 1)^2 - x(3x + 2) = 5$
e) $(x - 1)^2 - (x - 4)^2 = (x + 3)^2 - (x + 2)^2$
f) $(2x + 1)^2 - (4x - 3)^2 = (3 - 6x)(2x + 1) - (x - 18)$

3. GLEICHUNGEN MIT BRÜCHEN

1. a) $\frac{x+5}{3} = \frac{x-5}{2}$ b) $\frac{3x-3}{24} = \frac{5x+7}{56}$ c) $\frac{4x+2}{3} = \frac{6x+17}{8}$
d) $\frac{x-4}{2} = \frac{x-1}{3}$ e) $\frac{2x-2}{3} = \frac{3x-2}{6}$ f) $\frac{2x+5}{3} = \frac{8x+6}{5}$

2. a) $\frac{x-9}{3} + \frac{3x-4}{4} = \frac{2x+3}{3}$ b) $\frac{3x+5}{4} - \frac{5x+15}{20} = \frac{2x+3}{5}$
c) $\frac{3x+1}{4} + \frac{x-2}{3} - \frac{4x-5}{5} = 2$ d) $\frac{7x-3}{6} = 2x - \frac{9x+9}{12}$
e) $\frac{7x-5}{2} = \frac{5x-3}{2} + \frac{3x+5}{5}$ f) $\frac{x+1}{2} - \frac{x-2}{3} = 2 + \frac{x-5}{4}$

4. REINQUADRATISCHE GLEICHUNGEN

1. a) $4x^2 - 100 = 0$ b) $5x^2 + 80 = 0$ c) $5x^2 - 245 = 0$ d) $2x^2 - 25 = 0$
e) $3x^2 - 14 = 0$ f) $8x^2 + 16 = 0$ g) $9x^2 - 81 = 0$ h) $0,3x^2 - 2,7 = 0$

2. a) $(4x-1)^2 = (x-4)^2$
b) $(x+3)(x-3) = (6-x)(6+x) + 5$
c) $(5x+2)^2 = (3x+4)^2 + 4(1-x)$
d) $(4x-3)^2 = (5x-2)^2 - 4(x+1)$
e) $(x+5)(x-5) = (2-x)(2+x) + 3$
f) $(7x-6)(5x-2) = (6x-5)^2 - (-16x-22)$

5. GEMISCHT QUADRATISCHE GLEICHUNGEN

1. a) $x(x+4) + 5 = -1 - (2x+3)$ b) $3x(2x+5) = x - 2(2x+6)$
c) $2x(x-2) = 1 - 3(5-4x)$ d) $12x(x+1) = 42(x+1) - (3x-42)$
e) $4(5-x) = 2(x+2)(5-x) - 3(x+2)$ f) $(3x+1)(3x+2) + 28 = 12(3x+1)$

2. a) $(x+4)(x+2) = -x(x+10) - 4(x-2)$ b) $(2x+10)(x+1) - 96 = 12(x+1)$
c) $(x+4)(x+2) = -4(x-2) + x(x+10)$ d) $(x+3)(x+4) = 6(x+9)$
e) $24(x-2) = 5(x-2)(x+3) - 6(x+3)$ f) $(7+5x)(9x-8) = (5+7x)(9-8x)$

3. a) $(x + 2)^2 + 5x + 2 = (2x - 6)^2$ b) $(x - 4)^2 + (x - 3)^2 = 61$
 c) $(3x + 1)^2 - (x + 2)^2 = 33$ d) $(x + 5)^2 + (x + 3)^2 = 100$
 e) $(4 - 3x)^2 - (3 - 2x)^2 - 3 = 0$ f) $(x - 1)^2 - (2x - 2) = -(x - 3)^2$

6. PRÜFUNGSAUFGABEN

Bestimme die Lösungsmenge der folgenden Gleichung

$$(3x - 5)^2 - (x + 3)^2 = (x + 1)^2$$

Bestimme die Lösungsmenge der folgenden Gleichung

$$(2x + 1)^2 - 10 = (3x - 1)^2 - (3x - 2)^2$$

Bestimme die Lösungsmenge der folgenden Gleichung

$$2(x + 3)^2 + 3 = (x - 1)^2 - 6x - (x - 2)^2$$