

Übung zu Termen 9

Multiplizieren Sie aus, vereinfachen Sie und klammern Sie einen gemeinsamen Faktor aus:

1. $5(2x - 4z) + 4(x - 5z)$
2. $4 + 4(c - 2b) + 8(2b - c)$
3. $x(3 - y) - 9(x + y) + xy$
4. $(x - 4)(x - 5) - (x - 2)(x - 3)$
5. $(x - 5)(x + 5) + (x - 2)(x + 4) - 2x^2 + 3x + 8$
6. $-(x - 4)(x + 5) + (x + 4)(x - 5) + 10$
7. $16x + (x + 2)^2 + (x - 2)^2 - (x - 2)(x + 2)$
8. $5(x - 4)^2 - 4(x - 2)^2 + 9x^2$
9. $-4(x - 5(x - 2)) + (2x - 4y)^2 - 4x^2 - 16y^2$
10. $(2x - 4)^2 + 16x$

Übung zu Termen 9

1.

$$\begin{aligned}5(2x - 4z) + 4(x - 5z) &= 10x - 20z + 4x - 20z \\ &= 14x - 40z \\ &= 2(7x - 20z)\end{aligned}$$

2.

$$\begin{aligned}4 + 4(c - 2b) + 8(2b - c) &= 4 + 4c - 8b + 16b - 8c \\ &= 8b - 4c + 4 \\ &= 4(2b - c + 1)\end{aligned}$$

3.

$$\begin{aligned}x(3 - y) - 9(x + y) + xy &= 3x - xy - 9x - 9y + xy \\ &= -6x - 9y \\ &= -3(2x + 3)\end{aligned}$$

4.

$$\begin{aligned}(x - 4)(x - 5) - (x - 2)(x - 3) &= x^2 - 9x + 20 - (x^2 - 5x + 6) \\ &= x^2 - 9x + 20 - x^2 + 5x - 6 \\ &= -4x + 14 \\ &= 2(-2x + 7) = -2(2x - 7)\end{aligned}$$

5.

$$\begin{aligned}(x - 5)(x + 5) + (x - 2)(x + 4) - 2x^2 + 3x &= x^2 - 25 + x^2 + 2x - 8 - 2x^2 + 3x \\ &= 5x - 25 \\ &= 5(x - 5)\end{aligned}$$

6.

$$\begin{aligned}-(x - 4)(x + 5) + (x + 4)(x - 5) + 10 &= -(x^2 + x - 20) + x^2 - x - 20 + 10 \\ &= -x^2 - x + 20 + x^2 - x - 16 + 10 \\ &= -2x + 10 \\ &= -2(x - 5) = 2(-x + 5)\end{aligned}$$

7.

$$\begin{aligned}16x + (x + 2)^2 + (x - 2)^2 - 2(x - 2)(x + 2) \\ = 16x + x^2 + 4x + 4 + x^2 - 4x + 4 - 2(x^2 - 4) \\ &= 16x + 2x^2 + 8 - 2x^2 + 8 \\ &= 16x + 16 \\ &= 16(x + 1)\end{aligned}$$

Übung zu Termen 9

8.

$$\begin{aligned}5(x-4)^2 - 4(x-2)^2 &= 5(x^2 - 8x + 16) - 4(x^2 - 10x + 25) + 9x^2 \\ &= 5x^2 - 40x + 80 - 4x^2 + 40x + 100 + 9x^2 \\ &= 10x^2 + 180 \\ &= 10(x^2 + 18)\end{aligned}$$

9.

$$\begin{aligned}-4(x - 5(x - 2)) + (2x - 4y)^2 - 4x^2 - 16y^2 \\ = -4(x - 5x + 10) + 4x^2 - 16xy + 16y^2 - 4x^2 - 16y^2 \\ = -4(-4x + 10) - 16xy \\ = 16x - 16xy - 40 \\ = 8(2x - 2xy + 5)\end{aligned}$$

10.

$$\begin{aligned}(2x - 4)^2 + 16x &= 4x^2 - 16x + 16 + 16x \\ &= 4x^2 + 16 \\ &= 4(x^2 + 4)\end{aligned}$$