

## Binome höherer Potenzen, Trinome und Co.

Lösungen:

1.

$$(a - b)^3 = a^3 - 3a^2b + 3ab^2 - b^3$$

2.

$$(x + y)^5 = x^5 + 5x^4y + 10x^3y^2 + 10x^2y^3 + 5xy^4 + y^5$$

3.

$$(a + b)^3(a - b) = a^4 + 2a^3b - 2ab^3 - b^4$$

4.

$$(a + b)^2(a - b)^2 = a^4 - 2a^2b^2 + b^4$$

5.

$$\begin{aligned}(a + b)(c - d)(-e + f)(g + h) &= -aceg - bceg + adeg + bdeg \\ &+ acfg + bcfg - adfg - bdfg \\ &- aceh - bceh + adeh + bdeh \\ &+ acfh + bcfh - adfh - bdfh\end{aligned}$$

6.

$$(a + b)(a - b)(-a + b)(-a - b) = a^4 - 2a^2b^2 + b^4$$

7.

$$(a + b + c)^2 = a^2 + 2ab + b^2 + 2ac + 2bc + c^2$$

8.

$$(a + b + c)(a + b - c) = a^2 + 2ab + b^2 - c^2$$

9.

$$(a + b + c)(a - b - c) = a^2 - b^2 - 2bc - c^2$$

10.

$$(a + b + c)(-a - b + c) = -a^2 - 2ab - b^2 + c^2$$

11.

$$(a+b+c)(a-b-c)(-a+b-c) = -a^3 + a^2b + ab^2 - b^3 - a^2c + 2abc - b^2c + ac^2 + bc^2 + c^3$$

12.

$$(a + b + c + d)(a - b - c - d) = a^2 - b^2 - 2bc - c^2 - 2bd - 2cd - d^2$$

13.

$$(a+b+c+d+e)(a-b-c-d-e) = a^2 - b^2 - 2bc - c^2 - 2bd - 2cd - d^2 - 2be - 2ce - 2de - e^2$$