

# Binomische Formeln



$$1. \text{ Bin. F.: } (a+b)^2 = (a+b) \cdot (a+b) = \underbrace{a^2}_{1} + \underbrace{ab}_{2} + \underbrace{ba}_{3} + \underbrace{b^2}_{4} = \underbrace{a^2}_{1} + \underbrace{2ab}_{2/3} + \underbrace{b^2}_{4}$$

$\overbrace{ab+ba}^{1ab+1ab}$        $\boxed{b \cdot a = a \cdot b}$

$$\underline{36} = \underbrace{(4+2)}_6^2 = (4+2) \cdot (4+2) = 16 + \underbrace{8}_{4 \cdot 2} + \underbrace{8}_{4 \cdot 2} + 4 = 16 + \underbrace{2 \cdot 8}_{4 \cdot 2} + 4$$

$$2. \text{ Bin. F.: } (a-b)^2 = (a-b) \cdot (a-b) = \underbrace{a^2}_{1} - \underbrace{ab}_{2} - \underbrace{ab}_{3} + \underbrace{b^2}_{4} = \underbrace{a^2}_{1} - \underbrace{2ab}_{2/3} + \underbrace{b^2}_{4}$$

$4 \left[ (-b) \cdot (-b) = +b^2 \right]$

$$\underline{4} = \underbrace{(4-2)}_2^2 = (4-2) \cdot (4-2) = 16 - \underbrace{8}_{4 \cdot (-2)} - \underbrace{8}_{(-2) \cdot 4} + \underbrace{4}_{(-2) \cdot (-2)} = 16 - \underbrace{16}_0 + 4$$

$$3. \text{ Bin. F.: } (a+b) \cdot (a-b) = \underbrace{a^2}_{1} - \underbrace{ab}_{2} + \underbrace{ab}_{3} - \underbrace{b^2}_{4} = \underbrace{a^2}_{1} - \underbrace{b^2}_{4}$$

$-1ab + 1ab = 0$

$$\underline{12} = \underbrace{(4+2)}_6 \cdot \underbrace{(4-2)}_2 = 16 - \underbrace{8}_{4 \cdot (-2)} + \underbrace{8}_{2 \cdot 4} - \underbrace{4}_{2 \cdot (-2)} = 16 - 4 = \underline{12}$$