

$$(1) (a+b)^2 = a^2 + 2ab + b^2$$

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

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

(1) Wende die binomischen Formeln an.

$$\begin{aligned} \text{a) } & (x+y)^2 \\ & (x-y)^2 \\ & (x+y)(x-y) \end{aligned}$$

$$\begin{aligned} \text{b) } & (r+s)^2 \\ & (e-f)^2 \\ & (c+d)(c-d) \end{aligned}$$

$$\begin{aligned} \text{c) } & (5a+6b)^2 \\ & (7x-y)^2 \\ & (5r-6)(5r+6) \\ & \left(\frac{1}{3}x + \frac{1}{5}y\right)^2 \end{aligned}$$

$$\begin{aligned} \text{d) } & (-4+x)^2 \\ & (a+(-7))^2 \\ & (-3-z)^2 \\ & (9a - (-8)b)^2 \end{aligned}$$

(2) Wende erst binomische Formeln an. Fasse dann zusammen.

$$\begin{aligned} \text{a) } & (a+3)^2 - (a-1)^2 \\ & (5x-3y)^2 + (2x+y)^2 \\ & (3r-4s)^2 - (5s-2r)^2 \\ & (5a+6b)^2 + (7b+4a)^2 \end{aligned}$$

$$\begin{aligned} \text{b) } & (13r+11s)^2 - (15r-20s)^2 \\ & (8a+3b)^2 - (2+5a)(2-5a) \\ & (7x-6y)(7x+6y) + (5x-9y)^2 \\ & (12u-14v)^2 + (13u-11v)^2 \end{aligned}$$

$$\begin{aligned} \text{c) } & (9x-7y)^2 - (2x+3y)(2x-3y) \\ & (12u+5v)(12u-5v) + (3u-8v)^2 \\ & (11a-12b)^2 + (9a-8b)^2 \\ & (9x-5y)^2 - (15y-16x)^2 \end{aligned}$$

$$\begin{aligned} \text{d) } & (6a-7b)^2 + (9b+12a)^2 - (4b-8a)^2 \\ & (5x+9y)(5x-9y) - (12y-13x)(12y+13x) \\ & (8r+11s)^2 - (20r-25s)^2 - (3s-7r)^2 \\ & (17c-19d)^2 - (8c+7d)^2 + (2c-9d)(2c+9d) \end{aligned}$$

(3) Faktorisiere mit Hilfe der dritten binomischen Formel.

$$\begin{array}{ccccccc} a^2 & - & b^2 & = & (a+b) & (a-b) \\ \perp & & \perp & = & \perp & \perp & \perp & \perp \\ 16x^2 - 25y^2 & = & (4x)^2 - (5y)^2 & = & (4x+5y) & (4x-5y) \end{array}$$

$$\begin{aligned} \text{a) } & r^2 - s^2 \\ & u^2 - v^2 \\ & b^2 - 9 \\ & 1 - a^2 \end{aligned}$$

$$\begin{aligned} \text{b) } & 0.36 - a^2 \\ & x^2 - 1.44 \\ & r^2 - \frac{81}{25} \\ & 0.09u^2 - 0.49v^2 \end{aligned}$$

(4) Wende die erste oder zweite binomische Formel an.

$$\begin{aligned} \text{a) } & u^2 + 2uv + v^2 \\ & 25 + 2 \cdot 5u + u^2 \\ & y^2 - 14y + 49 \\ & \frac{4}{9} + \frac{4}{3}c + c^2 \end{aligned}$$

$$\begin{aligned} \text{b) } & 9a^2 + 6ab + b^2 \\ & r^2 - 16rs + 64s^2 \\ & 4a^2 + 40ab + 100b^2 \\ & 144z^2 - 360zy + 225y^2 \end{aligned}$$