Wende eine Binomische Formel an:

$(x + 2y)^2 = x^2 + 4xy + 4y^2$

$(3x - y)^2 = 9x^2 - 6xy + y^2$

$(a + 4b)(a - 4b) = a^2 - 16b^2$

$(2a - 3b)^2 = 4a^2 - 12ab + 9b^2$

$(5x + 2y)^2 = 25x^2 + 20xy + 4y^2$

$(3x + 2y)(3x - 2y) = 9x^2 - 4y^2$

$(x^2 - y^2)^2 = x^4 - 2x^2y^2 + y^4$

$(2x^3 + 3y^2)^2 = 4x^6 + 12x^3y^2 + 9y^4$

Wende die Formeln nun umgekehrt an:

$x^2 + 2xy + y^2 = (x + y)^2$

$4a^2 - 12ab + 9b^2 = (2a - 3b)^2$

$4u^2 - 16v^2 = (2u - 4v)(2u + 4v)$

$64x^2 + 16xy + y^2 = (8x + y)^2$

$a^4 - b^6 = (a^2 + b^3)(a^2 - b^3)$

$81x^4 + 36x^2y + 4y^2 = (9x^2 + 2y)^2$

$4x^4y^4 - 36a^2 = (2x^2y^2 + 6a)(2x^2y^2 - 6a)$

$x^8 + 8x^4 + 16 = (x^4 + 4)^2$

$(x - xy)^2 - a^4 = (x - xy + a^2)(x - xy - a^2)$

Löse die Klammern soweit wie möglich auf:

$(2a + 3b)^2 = 4a^2 + 12ab + 9b^2$

$(a - 5b^2)^2 = a^2 - 10ab^2 + 25b^4$

$(2a - 3b)(2a + 3b) = 4a^2 - 9b^2$ (3. Bin. Formel)

$(3ab + 2\,bc)^2 = 9a^2b^2 + 12ab^2c + 4b^2c^2$

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

Faktorisiere soweit wie möglich:

$9ab^2 - 4ac^2 = a(9b^2 - 4c^2) = a(3b + 2c)(3b - 2c)$

$a^2 - 16ab + 64b^2 = (a - 8b)^2$

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

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

$2a^2 + 6\sqrt{2}ab + 9b^2 = \left(\sqrt{2}a + 3b\right)^2$

$12a^2 - 27b^2 = 3(4a^2 - 9b^2) = 3(2a + 3b)(2a - 3b)$

$9a^4 + 12a^2b^2 + 4b^4 = (3a^2 + 2b^2)^2$

$ab - abc^2 = ab(1 - c^2) = ab(1 + c)(1 - c)$

$a + 4ab + 4ab^2 = a(1 + 4b + 4b^2) = a(1 + 2b)^2$