

Aufgaben zu den binomischen Formeln

1.0 Ergänzen Sie zu einer vollständigen binomischen Formel.

$$1.1 \quad (x + \square)^2 = \square + \square + 49$$

$$1.2 \quad (\square + 5c)^2 = \square + 30bc + \square$$

$$1.3 \quad (\square + 3)^2 = 4a^2 + \square + \square$$

$$1.4 \quad (4c + \square)^2 = \square + \square + 25a^2$$

$$1.5 \quad (\square + 2r)^2 = 16s^2 + \square + \square$$

$$1.6 \quad (ab + \square)^2 = \square + 4abc + \square$$

$$1.7 \quad (2a - \square)^2 = \square - \square + 9b^2$$

$$1.8 \quad (\square - g)^2 = \square - 4dg + \square$$

$$1.9 \quad (\square - 3y)^2 = x^4 - \square + \square$$

$$1.10 \quad (\square - 2)^2 = a^2 - \square + \square$$

$$1.11 \quad (\square - 4y)^2 = 9x^2 - \square + \square$$

$$1.12 \quad (6a - \square)^2 = \square - 4ab + \square$$

2.0 Wenden Sie die binomischen Formeln an und vereinfachen Sie.

$$2.1 \quad (x + 5)^2 - x^2 - 25$$

$$2.2 \quad (x - 9)^2 - 81 - x^2$$

$$2.3 \quad (3y + 2x)^2 - 4x^2 + 6xy$$

$$2.4 \quad 6x + (3 - x)^2$$

$$2.5 \quad a^2 + b^2 + (a + b) \cdot (a - b)$$

$$2.6 \quad 81 + (5x - 9) \cdot (5x + 9) - 25x^2$$

3.0 Beachten Sie die Minusklammern und vereinfachen Sie.

$$3.1 \quad 8x - (4x - 1)^2$$

$$3.2 \quad 9a^2 + 4b^2 - (3a - 2b)^2$$

$$3.3 \quad 16x^2 - (1 - 4x) \cdot (1 + 4x)$$

$$3.4 \quad 81 - (9 - 2v) \cdot (9 + 2v)$$

$$3.5 \quad 12xy - (3x + y)^2$$

$$3.6 \quad y^2 - (x - y)^2 - x^2$$

4.0 Lösen Sie die Klammern auf und vereinfachen Sie.

$$4.1 \quad (1 + x)^2 + (1 - x)^2$$

$$4.2 \quad (y - 7)^2 - (y - 7)^2$$

$$4.3 \quad (2u + v)^2 - (2u - v)^2$$

$$4.4 \quad (a + b)^2 - (a^2 + b^2)$$

$$4.5 \quad (a + 4)^2 - (a - 1) \cdot (a + 1)$$

$$4.6 \quad (y + 7z) \cdot (y - 7z) - (y - 7z)^2$$

$$4.7 \quad (x + 2y - z) \cdot (y - z)$$

$$4.8 \quad (2 + a) \cdot (2a - b - 5)$$

Lösungen

$$1.1 \quad (x+7)^2 = x^2 + 14x + 49$$

$$1.2 \quad (3b+5c)^2 = 9b^2 + 30bc + 25c^2$$

$$1.3 \quad (2a+3)^2 = 4a^2 + 12a + 9$$

$$1.4 \quad (4c+5a)^2 = 16c^2 + 40ac + 25a^2$$

$$1.5 \quad (4s+2r)^2 = 16s^2 + 16sr + 4r^2$$

$$1.6 \quad (ab+2c)^2 = (ab)^2 + 4abc + 4c^2$$

$$1.7 \quad (2a-3b)^2 = 4a^2 - 12ab + 9b^2$$

$$1.8 \quad (2d-g)^2 = 4d^2 - 4dg + g^2$$

$$1.9 \quad (x^2-3y)^2 = x^4 - 6x^2y + 9y^2$$

$$1.10 \quad (a-2)^2 = a^2 - 4a + 4$$

$$1.11 \quad (3x-4y)^2 = 9x^2 - 24xy + 16y^2$$

$$1.12 \quad \left(6a - \frac{1}{3}b\right)^2 = 36a^2 - 4ab + \frac{1}{9}b^2$$

$$2.1 \quad x^2 + 10x + 25 - x^2 - 25 = 10x$$

$$2.2 \quad x^2 - 18x + 81 - 81 - x^2 = -18x$$

$$2.3 \quad 9y^2 + 12xy + 4x^2 - 4x^2 + 6xy = 9y^2 + 18xy$$

$$2.4 \quad 6x + 9 - 6x + x^2 = 9 + x^2$$

$$2.5 \quad a^2 + b^2 + a^2 - b^2 = 2a^2$$

$$2.6 \quad 81 + 25x^2 - 81 - 25x^2 = 0$$

$$3.1 \quad 8x - 16x^2 + 8x - 1 = -16x^2 + 16x - 1$$

$$3.2 \quad 9a^2 + 4b^2 - 9a^2 + 12ab - 4b^2 = 12ab$$

$$3.3 \quad 16x^2 - 1 + 16x^2 = 32x^2 - 1$$

$$3.4 \quad 81 - 81 + 4v^2 = 4v^2$$

$$3.5 \quad 12xy - 9x^2 - 6xy - y^2 = -9x^2 + 6xy - y^2$$

$$3.6 \quad y^2 - x^2 + 2xy - y^2 - x^2 = -2x^2 + 2xy$$

$$4.1 \quad 1 + 2x + x^2 + 1 - 2x + x^2 = 2x^2 + 2$$

$$4.2 \quad y^2 - 14y + 49 - y^2 + 14y - 49 = 0$$

$$4.3 \quad 4u^2 + 4uv + v^2 - (4u^2 - 4uv + v^2) = 4u^2 + 4uv + v^2 - 4u^2 + 4uv - v^2 = 8uv$$

$$4.4 \quad a^2 + 2ab + b^2 - a^2 - b^2 = 2ab$$

$$4.5 \quad a^2 + 8a + 16 - (a^2 - 1) = a^2 + 8a + 16 - a^2 + 1 = 8a + 17$$

$$4.6 \quad y^2 - 49z^2 - (y^2 - 14yz + 49z^2) = y^2 - 49z^2 - y^2 + 14yz - 49z^2 = -98z^2 + 14yz$$

$$4.7 \quad xy - xz + 2y^2 - 2yz - zy + z^2 = xy - xz + 2y^2 - 3yz + z^2$$

$$4.8 \quad 4a - 2b - 10 + 2a^2 - ab - 5a = -a - 2b - 10 + 2a^2 - ab$$